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CQ

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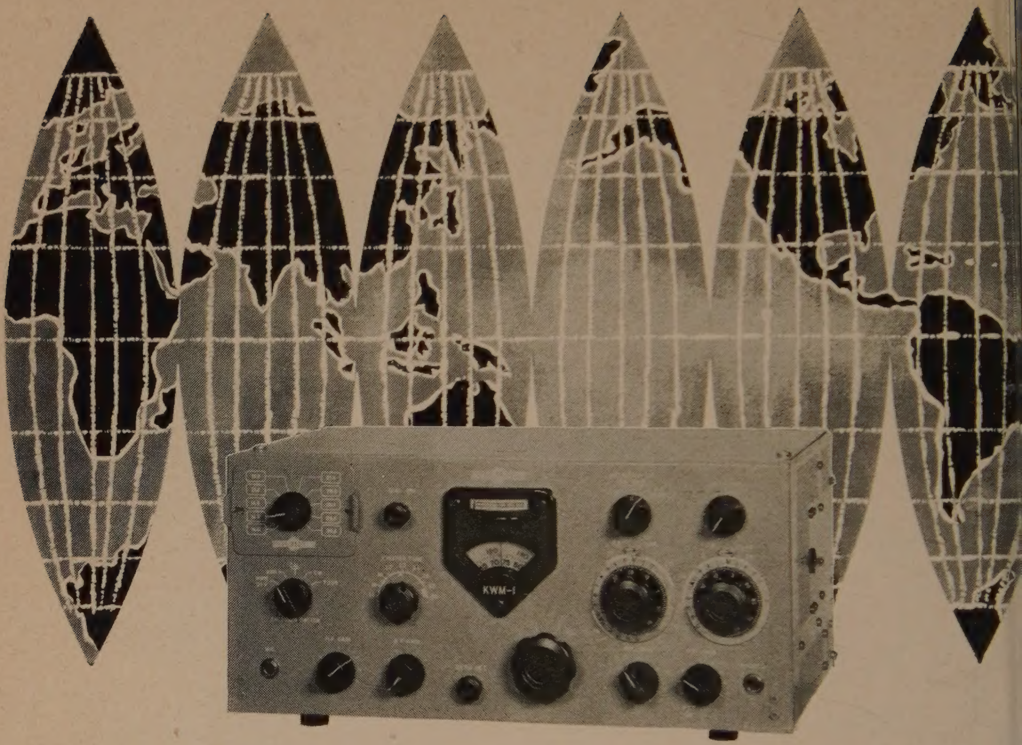

Collins KWM-1

Favorite of DXpedition

The versatility of the KWM-1 mobile/fixed SSB Transceiver has made it the natural choice of the amateur operator on the move. It is the most compact traveling companion available, yet it runs 175 watts input on SSB. Besides hundreds in operation from cars (and even light airplanes) all over the United States, the KWM-1 is fast gaining an impressive reputation with amateurs who take the transceiver with them overseas. Representative of areas visited with the KWM-1 are Africa, the South Pacific, Europe, South America, Canada, Greenland, Alaska, the Arctic, English Channel islands, Saint Andres Island, the Dominican Republic, Saint Martin Island and Anguilla.

The KWM-1 is also scheduled for expeditions to Galapagos, Barbados and the Boy Scout Jamboree in New Zealand and for a round-the-world cruise.

COLLINS

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CQ—The Radio Amateur's Journal

00 West 43rd Street, New York 36, N. Y.

August, 1958
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CLELL K8DKY

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DICK K9BMJ/8

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AL W8HTX

All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur fraternity with which they are in constant contact. With this kind of representation in Benton Harbor, you can continue to rely on high-performance Heathkit amateur radio equipment designed by hams, for hams!

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FRANK W8WUN

AL K8BLL

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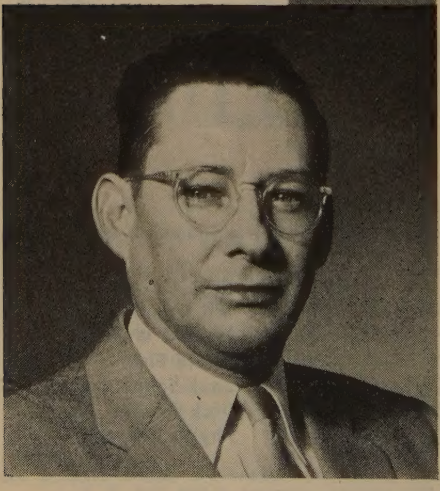
CHUCK K8CJI


ROGER MACE (W8MWZ)
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HEATH COMPANY

HEATHKIT 50-WATT CW TRANSMITTER KIT

MODEL DX-20

$35.95

If high efficiency at low cost in a CW transmitter interests you should be using a DX-20! It employs a single 6DQ6A t in the final Amplifier stage for plate power input of 50 watts. oscillator stage is a 6CL6, and the rectifier is a 5U4GB. Sin knob band-switching is featured to cover 80, 40, 20, 15, 11 10 meters, and a pi network output circuit matches ante impedances between 50 and 1000 ohms to reduce harm output. Designed for the novice as well as the advanced c CW operator. The transmitter is actually fun to build, even f beginner, with complete step-by-step instructions and picto diagrams. All the parts are top-quality and well rated for t application. "Potted" transformers, copper-plated chassis, ceramic switch insulation are typical. Mechanical and electr construction is such that TVI problems are minimized. If desire a good clean CW signal, this is the transmitter for y Shpg. Wt. 19 lbs.

. . . de W2NSD

never say die

Washington, August 15, 16, 17

Hot poop from convention HQ via W4AHG, the convention manager, indicates that this will probably be the biggest and best ARRL National ever run. If you'd like to get a brochure on it drop a card to the Amateur Radio Convention, Sheraton-Park Hotel, Washington, D. C.

Some of the features will be: free coffee and donuts courtesy Philco Tech-Rep Division, prizes for the ladies (including a mink scarf), nursery for the babies, tours everywhere for all hands, lunches and dinners for the DX'ers, SSB'ers, RTTY'ers, military, League Officials, and QCWA'ers. There will be special FCC exams, code contests, mobile installation contest, QSL contest, all sorts of awards and prizes, a daily edition of Auto-Call, talks by: W4HEL of CREI, W3MEG of NRI and W1ICP of ARRL for the Novices; W1FZJ moderates the VHF session, W1RUD talks and shows slides on the fantastic W1MHL/1 contest operation and W1HDQ moderates a VHF discussion; W3QQH of Phil-Mont describes their mobile unit, W4QS discusses antenna problems, W4NJF and W3NL round out the mobile session; TVI is covered by W1DBM and an FCC representative; SSB'ers will hear W4QS and representatives of almost every company in the SSB field. I just gave call letters because you should know all of those fellows.

Contests will be discussed by W2IOP, W4KVX, W0CDP, and W2ZDP. RTTY'ers will hear W2JAV, W3PYW, and W0BP. The DX session will be of real interest, featuring W2ICE, W2NSD (with movies of Navassa), W6KG and W1WPO (ARRL). The Public Relations Session will have W2KH and W3YA.

All in all it will be a busy three days and should be a memorable one for you. It is a bit expensive, but then something like this happens only once every few years so it'll be worth it.

CQ'll have a booth there with the usual low-low-low convention subscription prices and fast talking editor to con you into jumping aboard before the impending rate increase.

Rallies

The "Ohio 24" Sports Car Club of America National Rally used ham radio for communications at check points as described in an article in this issue. The Washington Mobile Club has provided similar service down their way in the past. Just recently I participated in the latest SCCA National Rally, the "Historic New York" Rally which was run out of Syracuse, and found several hams involved in the event. I was car #77 and W2GNT had car #76. Communications head of the rally was W2PXA and W2HUA ran the Precision Driving Test.

While in Syracuse for the rally I tried out my Gonset, but got nothing but a severe case of the frustrations trying to get the attention of the local gang who operated all on one frequency and never, even when they signed off, tuned the band. I had disabled the Transcon-6 in the car since rally rules state that no car can have two way radio so I didn't get a chance to try that band out.

The national SCCA rallies are really tough, but they are fun and I think I'll keep at 'em. The next one will be the Berkshire Rally up in Massachusetts in August, the weekend after the Washington convention.

Who? Me?

As editor of CQ almost everyone expects me to be anti-ARRL. Sure, CQ is in a way a sort of competitor of QST and I could understand if I were expected to be anti-QST, but how come I'm supposed to be against ARRL? After all, it is the *only* national ham club that we've got and the club does do a lot of good for the hobby. It performs many services for us, many of which are overlooked when some argument comes up over a difference in policy on some one specific point.

Plus my own membership in ARRL for over twenty years now. And, with almost half of the hams being members of ARRL, a considerable number of them having spent several years working their way up into the vast network of appointed and elected offices, it would certainly be imprudent for me to be anti-ARRL.

Further, I well remember the explosion that erupted when a former editor of CQ started printing some facts about the ARRL about five years ago. The mail soon made it obvious that in general the amateurs didn't want to know what was going on. They wanted to preserve the illusion that they were members of a vast omnipotent organization. It is a nice feeling and I don't blame anyone for wanting to keep it. So I understand their resentment when some scoundrel comes along intruding some "facts" that they don't want to hear and won't believe.

[*More on page 10*]

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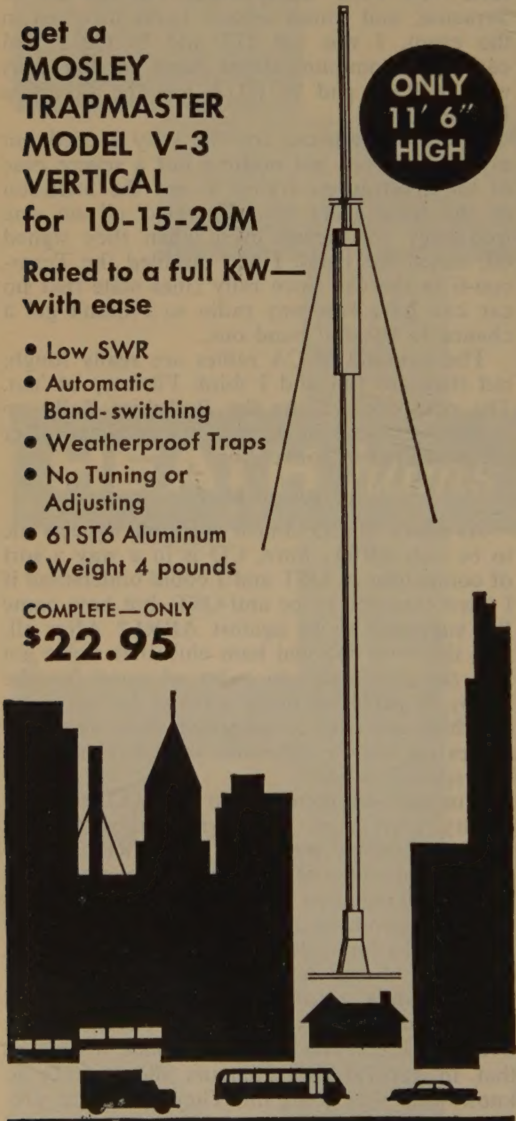

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8622 ST. CHARLES ROCK ROAD
ST. LOUIS 14, MISSOURI

For further information, check number 6 on page 126.

W2NSD [*from page 9*]

You can therefore understand why, when took over as editor of CQ, that I decided t just run a magazine dedicated to acting as communications medium for hams and lea ing ARRL alone as much as possible. QS seemed to lean heavily in the direction of traff nets and technical discussions so I figured tha CQ would be of more value if it left this aspe to QST and aimed more at build-it articles an items of good general interest plus a stron set of reporters for the many facets of ou multi-hobby.

That's my policy gentlemen. It has bee really difficult at times to keep my typewrit shut. Andy, W3NL, in his "Autocall" bulleti is able to tell what is going on without fear c losing advertising and subscriptions and tha is the only source I know of for straight dop on things.

Some day, perhaps, we'll be able to let yo know what is happening. In the meantim please remember that when it comes to th matter of FCC legislation you have to spea for yourself and send your comments directl to the FCC. While it is true that the commen of ARRL and other clubs will be considere the main source of information for the FC on how the amateur really feels about a pro posal is reflected in the direct letters receive

CW Bands on Two and Six

The FCC has announced that a petition ha been entered to set aside the bottom 100 k of both two and six meters for exclusive c operation. The FCC asks that you write t them and give them your feelings on th proposed legislation. The address is FCC, Ama teur Division, Washington 25, D. C. The dead line for comment is August 29th so you haven much time.

If you are a two or six meter operator yo will probably have some strong views on th gem. Let's examine the situation a momen and see just who this rule is going to benefi The greater majority of operators in thos bands are using low power equipment an never use cw at all. A lot of 'em couldn't eve copy cw on their bfo-less receivers. A ver select few, under extraordinary conditions, d fire up on cw to take advantage of weak E layer propagation which is the result of th temporary sunspot splurge. Even so we fin that nothing has been worked on cw tha hasn't been worked on phone already. All th DX records have been made on phone.

What does this mean? Well, in a year so when the sunspots drop off and the ban again become local bands the fellows who s around and used the band for rag chewing w still be there and the cw men will be gone greener pastures, only everyone will have lo 100 kc of their band.

I have been operating on two meters ev

[*Still more on page 118*]

For further information, check number 7 on page 126.

One Thing is *Crystal Clear*—Your Signal

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transmitter/exciter

Exclusive HT-32 High Frequency Crystal Filter System a major, proven advance... cuts unwanted sideband at least 50 db.

Now Proven superior — vastly superior to any other type filter—is Hallicrafters' exclusive 5.0 mc. quartz crystal filter system.

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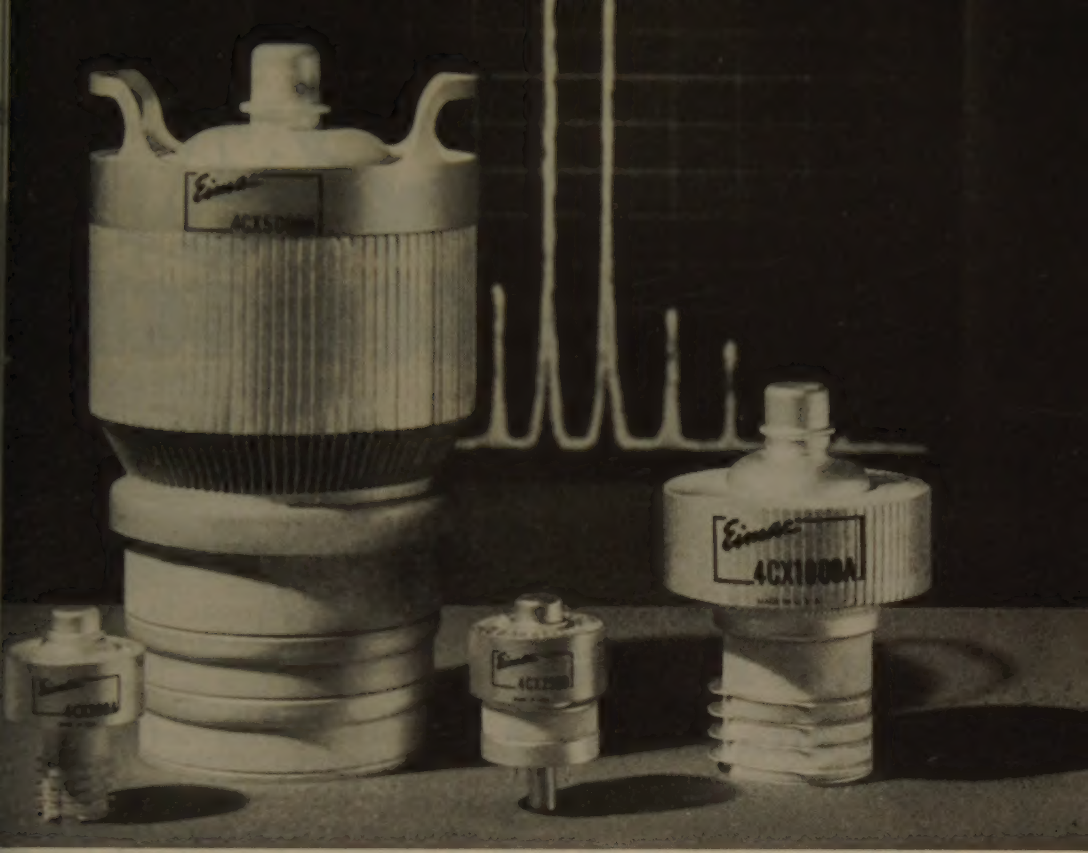
QSL contest

WINNER

LOSERS

Ernst Salvetti, HB9KV is the winner of this month's one year subscription to CQ . . . that's what you win if we think your QSL card is the most interesting one we've received since last month's deadline. Losers whose QSLs are almost-but-not-quite-winners receive a free copy of the magazine. This time they go to Jan Johansson, SM1AS; David Sussman, 5A2TA; and Charles "Chuck" Mooney, K8EWK.

Each month is a new contest and you can enter every month if you can afford the postage. All cards are eligible except those bearing commercial messages, individual handmade cards (they must be reproduced by graphic processes) and picture postcards with calls emblazoned in bright red nail polish. Now if there's still a spark of competitive enthusiasm left in you . . . send in that QSL.



The Ideal Approach to SSB . . .

Eimac Ceramic Tetrodes for Class AB_1

Generating a clean SSB signal is one thing . . . amplifying it to the desired power level without distorting or broadening it is another. A modern class AB_1 final amplifier designed around an Eimac ceramic-metal tetrode is the ideal answer to the problem. Three of the four Eimac ceramic tubes shown above — the 4CX250B, the 4CX300A and the new 4CX1000A — are ideal for amateur radio application. All four offer the high power gain, low distortion and superior linear performance that is needed for class AB_1 operation. Each has performance-proved reserve ability to handle the high peak powers encountered in SSB operation. Efficient integral-finned anode cooler and Eimac Air System Sockets keep blower requirements at a minimum and allow compact equipment design. And all four incorporate the many advantages of Eimac ceramic-metal design, which assures compact, rugged, high performance tubes.

The reliability and performance that make Eimac ceramic tubes the choice for government and commercial transmitters can be yours in a compact, SSB tabletop kilowatt or a deluxe mobile rig. Eimac ceramic tetrodes simplify design and give more watt-hours per dollar.

For a copy of Application Bulletin #9 "Single Sideband" write our Amateur Services Department

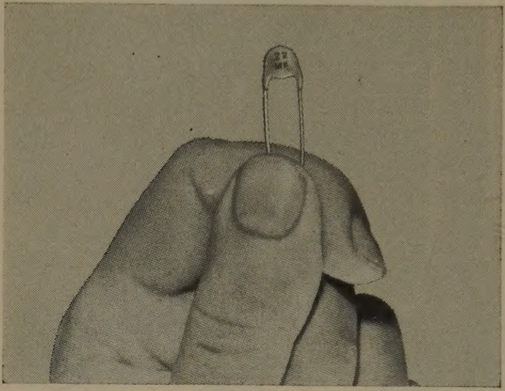
ITEL-McCULLOUGH, INC.
AN BRUNO · CALIFORNIA
imac *First* with ceramic tubes that can take it

For further information, check number 8 on page 126.

CLASS AB_1 SSB OPERATION

	4CX250B	4CX300A	4CX1000A	4CX5000A
Plate Voltage	2000 v	2500 v	3000 v	7500 v
Driving Power	0 w	0 w	0 w	0 w

100 Times the Capacity for Transistor Circuits



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For further information, check number 9 on page 126.

Feenix, Ar

Deer Hon. Ed:

You knowing the old saying, To Heds A
Better Than Having Fun? Well, that are n
old saying that applying to Scratchi resentl
No sir indeedy. The one I having trubble wi
are To Many Cooks Spoiling the Appetite-
and I not talking about food. Or about a
petites. Or even about cooks. Just talking abo
to many peepels when they not expected.

Let me explaneing what happening. I bee
trying to convincing local amchoors to comin
to Hamfest I wanting to holding. Like havin
in yeers before—fun, frolic and plenty cacktu
jooce. Howsumever, evrybuddies claiming
charging to much last yeer, so they saying the
not coming.

So, one day I on to meters band talking
local amchoor frend about Hamfest I not ha
ing. He saying it to bad we not having it. C
coursely, he feeling that way on acct. he fell
what having cacktus jooce consesshun
Scratchi holding Hamfest, and therefore h
wanting to make cupple bux to.

I telling him that the local amchoors ar
stubborn mules, and he coming back and say
ing maybe we should getting load of hay an
having Hamfest for them. I going back an
saying that we needing cupple loads here
Hon. Brother Itchi's ranch. We both laffin
passing back and forth few more plesentree
then sineing.

Leeving shack, walking out around ranc
looking over places where would putting thin
if ackchewally having Hamfest. Finding ni
place to having toob throwing contest. That a
ways worth millyun laffs. Also finding nice sp
to holding coil unwinding contest. This n
being to much fun, but Scratchi getting
keeping all the wire.

Also desiding where to hold cacktus joo
contest. Will having it rite next to swimmin
pool, so not have to running after chasers
day. Are just abouts to go back of barn
seeing where can holding antenna ereckshu
contest, when truck pulling it driveway, ar
guy getting out and asking me where I wantin
load of hay.

I telling him he making mistake, we n

[*Continued on page 96*]

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HQ-170

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or further information, check number 10 on page 126.

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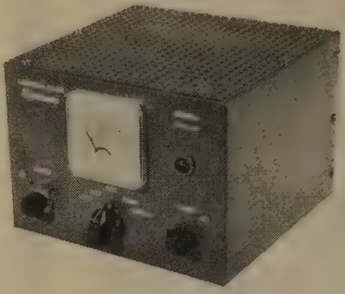

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This month CQ NEWS, our monthly
release, will carry an "on the spot" report
the National Convention in Washington,
The 114 affiliated club papers of the *CQ*
Service will have this report at their disp
and will be capable of providing their rea
with first hand news of the Convention hap
ings. Full credit for this scoop goes to
Washington correspondent, Ralph "Andy"
derson, W3NL, editor of *AUTO-CALL.*

On many occasions in the past *CQ* has
ried short excerpts from *AUTO-CALL. AU*
CALL has also been quoted several time
CQ NEWS and other Ham papers. The W
ington Mobile Radio Club, in conjunction
8 district clubs, produces the journal w
usually runs 30 pages. It is mailed to 600
arate addresses monthly and it covers just al
every phase of Ham Radio. Mr. Anderson
avid Ham and editor, is extremely busy
Convention preparations and special plan
run a daily copy of *AUTO-CALL* during
August "get-together." By taking time to w
a special report for *CQ NEWS*, Andy is b
exceedingly co-operative. By exercising su
policy he has made *AUTO-CALL* one of H
dom's finest club periodicals.

During the past month we have welco
these publications to our ranks: *DELAWA*
STATION BREAK, Kent County A.R.C., *T*
LISTENING POST, Queen City Emerge
Net, *GRID DIP*, Ham Club, *PEORIA AR*
HAM NEWS, Peoria Area A.R.C., *CONN*
TICUT PHONE-PATCH, Connecticut
Club, CQ-TV, British Amateur TV C
SYDNEY A.R.C., Assoc. member, *HAW*
EYE VIEW, Hoosier Amateur Women's C
FORWARD GAIN, Norwich & Dist.
(England), *CENTRAL MASS. A.R.A. B*
LETIN, Central Mass. A.R.A., *HAMATE*
CHATTER, The Milwaukee R.A.C., Inc.,
FEEDBACK, Mike & Key A.R.C.

Syndicate gossip: R. S. Barnes, W0H
editor of CKRC INK, Central Kansas R
resigned to accept a business promotion.
Van Wickle, W6TKA, familiar to *CQ* rea
is now editing KEY KLIX, Santa Bar
A.R.C. Inc. E. L. Sringer, editor, *LO*
SPEAKER, San Gabriel Valley A.R.C.
leaves his position on the club bulletin to
sume the presidency of the organization.
North Hills A.R.C., in the *NORTH HI*
R.C. NEWS, outlines an award for club m

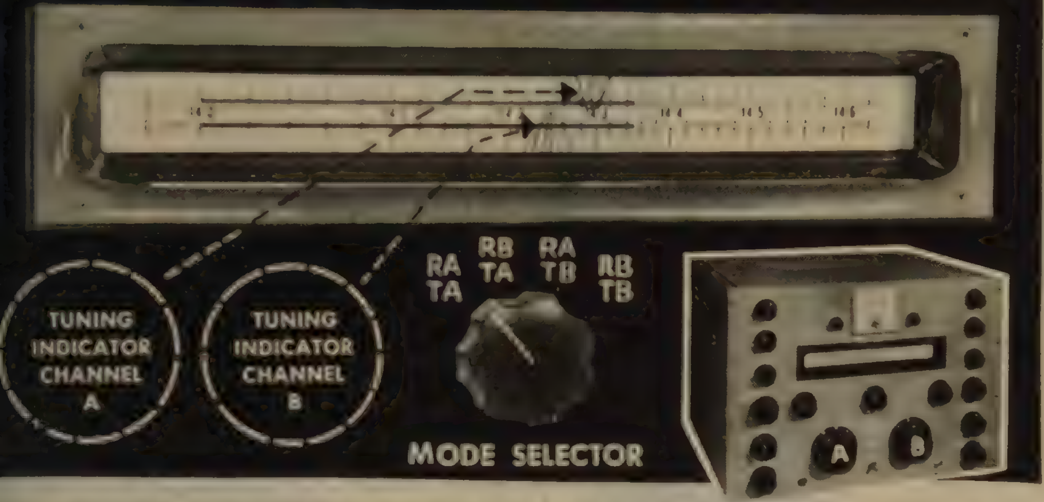
[*Continued on page 106*]

←For further information, check number 11 on pa

BECAUSE IT'S SO REVOLUTIONARY

we'd like to explain the four modes of operation of the

COSMOPHONE "35"



SPECIFICATIONS

- Operates on 10, 11, 15, 20, 40 and 80 meter bands.
- Transmits or receives SSB (upper or lower), single sideband with carrier (AM) or C W.
- Peak-Null "Q" Multiplier.
- Receiver Sensitivity: 1 Micro-volt @ 6 db S N ratio.
- Single 6146 output.
- Built-in VOX and QT.
- 40 db suppression.
- 3.1 kc mechanical filter for transmission and reception.
- Dual speed tuning knobs with ratios of 20:1 and 100:1 over a 600 kc band spread.
- Meter Indication for R.F. output, final Grid or Plate current and receiver signal strength.
- Dimensions 17" wide x 12" high x 15" deep.

Amateur Net Price

$799.50

Power Supply #P35

$139.50

The Cosmophone "35" is a complete amateur station. It functions as either a 2-channel bilateral transceiver or as 2 independent transmitter-receiver combinations.

HERE'S HOW . . .

1. Set tune selector switch to RA TA. Tune channel A to desired frequency. Peak transmitter. You are now set for the single channel transceiver operation.

2. Set tune selector switch to RB TA. Tune channel B to foreign DXing station. Tune channel A to any desired frequency inside the American ham band. You are now set to transmit inside ham band and receive DXing stations outside the ham band.

3. Set tune selector switch to RA TB. The same tuning procedure applies as to Mode 2 except channel A and channel B are now reversed.

4. Set tune selector switch to RB TB. The same tuning procedure applies as to Mode 1, except you are now transceiving on the channel B frequency.

By alternating between RA TA and RB TB you can maintain contacts with two nets without disturbing any frequency settings.

See the COSMOPHONE 35 at your distributor

For additional information and dealer nearest you, write Dept. Q4

COSMOS INDUSTRIES, INC.

31-28 Queens Boulevard, Long Island City, N. Y.

For further information, check number 12 on page 126

"Phasemaster II-B"

NEW!

CHECK THESE FEATURES !!

SSB or DSB suppressed carrier or with carrier, PM and CW.

6146 power amplifier delivers 65 PEP watts output, giving sufficient power to drive nearly all types of linear amplifiers INCLUDING grounded grid finals.

Calibrate control allows variable control of signal for zero beating VFO to receiver frequency or TOF (talk on frequency.)

Voltage Regulation of 6146 Screen and 9MC OSC.

Temperature compensating condensers in critical 9MC circuit for improved stability.

Built in 3500 cps low pass audio filter.

Amateur Net
$459.00

Built in VFO 100 to 1 Precision Dial.

Frequency Stability and Reset Accuracy better than 100 cycles.

Completely Bandswitched 160, 80, 40, 20, 15 and 10 meters.

for IMMEDIATE DELIVERY!

Price and design subject to change without notice.

Lakeshore INDUSTRIES

See Your Dealer or Write Today

MANITOWOC, WISCONSIN

MANUFACTURERS OF PRECISION ELECTRONIC EQUIPMENT

For further information, check number 13 on page 126.

VOICE OF AMERICA AMATEUR RADIO PROGRAM

CQ, CQ, CQ to all radio amateurs and shortwave listeners from the Voice of America. Each week the Voice of America broadcasts the VOA Ham Show—15 minutes devoted to the latest gossip on the ham bands, interviews with radio amateurs around the world, latest propagation forecasts, and discussions of the latest technical news of interest to radio amateurs and shortwave listeners.

The broadcasts, in the *English* language, are written and voiced by Bill Leonard, W2SKE, one of America's leading news commentators, and a very active radio amateur operator. Gene Kern, W2BAK, produces the program, and propagation forecasts are by George Jacobs, W3ASK, with radio amateurs *everywhere* invited to participate.

Beamed to Europe, but receivable in most areas of the world, the VOA Ham show can be heard as part of the "Report From America" broadcasts *each* Tuesday on the following frequencies during the spring and summer months:

Between 2100-2130 GMT (4-4:30 P.M. EST)

21580 kc	Tangier
21500 kc	WDSI, USA
21485 kc	WLWO, USA
17785 kc	WDSI, USA
15340 kc	Munich
15250 kc	WLWO, USA
9635 kc	Tangier
6170 kc	Munich

The show is repeated at 2200 GMT (5 PM EST) from Munich, Germany on 15340 and 6170 kilocycles. At 2230 GMT it is transmitted on the 1,000 kilowatt longwave (173 kilocycles) station of the VOA located near Munich, Germany. It is repeated again at 0400 GMT (11 PM EST) every Wednesday from Tangier, Morocco on 17710 and 11875 kilocycles.

Since shortwave schedules are subject to change, latest schedules can be obtained directly from:

Amateur Radio
Box 922
Washington 4, D. C.

The VOA has prepared a distinctive QSL card for exchange with listeners of the Ham Show, and W2SKE and the gang are looking forward to receiving QSL cards from radio amateurs and shortwave listeners *everywhere.* ■

VIKING "NAVIGATOR" TRANSMITTER EXCITER

More than a novice transmitter—also serves as a flexible VFO-Exciter delivering enough RF power to excite most high powered amplifiers on CW and AM! 40 watts CW input 6146 final amplifier tube—wide range pi-network output Built-in VFO or crystal control—bandswitching 160 through 10 meters. Timed sequence keying. TVI suppressed and filtered. Complete with tubes, less crystals

Cat. No. 240-126-1 Kit . . . . Amateur Net $149.50
Cat. No. 240-126-2 Wired and tested . . . . Amateur Net $199.50

VIKING "ADVENTURER" TRANSMITTER

Perfect for the novice or experienced amateur! 50 watts CW input—instant bandswitching 80 through 10 meters Crystal or external VFO control. Rugged 807 final amplifier tube—wide range pi-network output. Clean, crisp keying. TVI suppressed. Complete with tubes, less crystals

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SPEECH AMPLIFIER SCREEN MODULATOR

Designed to provide phone operation for the "Adventurer". High gain—use with crystal or dynamic microphones. With tubes.

Cat. No. 250-40 Kit . . . . Amateur Net $12.25

ou can't beat a Viking!

Dollar-for-dollar and feature-for-feature . . . Viking amateur transmitters are your best buy!

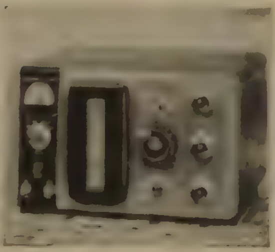
The Viking amateur equipment line offers you a complete choice of power ratings, types of emission and operating features in a wide range of prices. Compare Viking quality and performance—you'll soon see why Viking transmitters are "first choice" among the nation's amateurs.

than one-half kilowatt of
r and operating convenience!

"FIVE HUNDRED" TRANSMITTER

600 watts CW input . . . 500 watts and SSB (P.E.P. with auxiliary SSB)—instant bandswitching 80 through ters! Compact RF unit designed for p operation—power supply/modu- nit may be placed in any convenient n. All exciter stages ganged to VFO . High gain push-to-talk audio system. es by crystal control or highly stable, VFO. Class C 4-400A final amplifier es plate circuit efficiencies in excess of ith unequalled broadcast-type high mplitude modulation. Wide range pi- k output circuit with silver-plated final coil :will load virtually any antenna . Low level audio clipping—effectively uppressed and filtered. Complete with less crystals.

	Amateur Net
0-1 . . Kit	$749.50
0-2 . . Wired	$949.50



VIKING "COURIER" AMPLIFIER

This power-packed Class B linear amplifier is rated 500 watts P.E.P input with aux. SSB exciter—500 watts CW and 200 watts AM! Continuous coverage 3.5 to 30 mcs. May be driven by the Viking "Ranger", "Pacemaker" or other unit of comparable output. Drive requirements: 5 to 35 watts. Employs two 811A triodes in parallel—wide range pi-network output. Fully TVI suppressed. Complete with tubes

Cat. No.		Amateur Net
240-352-1	Kit	$244.50
240-352-2	Wired	$289.50

VIKING "THUNDERBOLT" AMPLIFIER

Rated at 2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear! Continuous coverage 3.5 to 30 mcs.—instant bandswitching. May be driven by the Viking "Ranger", "Pacemaker" or other unit of comparable output. Drive requirements: approx. 10 watts Class AB_2 linear, 20 watts Class C continuous wave. Employs two 4-400A tetrodes in parallel, bridge neutralized—wide range pi-network output. With tubes

Cat. No.		Amateur Net
240-353-1	Kit	$524.50
240-353-2	Wired	$589.50

E. F. Johnson Company

2815 SECOND AVENUE S. W. • WASECA, MINNESOTA

For further information, check number 19 on page 126.

Columbus, Ohio Air Force MARS mobiles.

by DICK SOWLER, W8FEM

P.O. Box 311 Mount Vernon, Ohio

The "Ohio 24" National Sports Car Rally Communications Report

The Mount Vernon (Ohio) Amateur Radio Club with the assistance of amateurs throughout the state of Ohio, once again provided communication for the annual "Ohio 24" National Sports Car Rally. The rally, run on May 9-11 is sponsored by the N. E. Ohio Region of the Sports Car Club of America (which is to the sports car enthusiast what the ARRL is to the radio amateur.)

The rally headquarters was in Mount Vernon, Ohio, because of its central location in the state. The Mount Vernon Amateur Radio Club had provided communication for the last rally, run in 1956, this being the first time amateur radio had been used for communication in a national rally. As result the rally results were computed in a fraction of the time normally required. The rally chairman, Mr. Tomi Thomson, of Chagrin Falls, Ohio, and the chief steward, Mr. Bill Schmidt, K8HYL, of Cleveland, Ohio, were so pleased with the results in 1956 that they asked the MVARC to assist again this year. Mr. Al Watts, W8OPU, was selected to be rally communications officer. Al organized the communications program and saw that it was carried out as planned.

Some readers may not be familiar with what occurs at a sports car rally. A sports car rally is a precision driving contest which is run over a specified course. The course usually consists of several legs or stages, each of whose distances are precisely measured. Each stage must be traveled at a specified average speed (usually slower than 40 mph.) There are checkpoints along this course where officials record the exact times that each car passes. Each car receives a given number of penalty points for each second it is early or late at each checkpoint. The car maintaining most closely the average speeds prescribed thus receives the least penalty points and wins the rally.

Each car has a driver and a navigator. The navigator receives the rally instructions when the car is started on the course. These instructions include in various forms: the course t be followed, distances between points, an the average speeds to be maintained. The nav gator must decipher the data given, comput arrival times at certain points, and keep th driver and car on course at the speed nece sary to reach the points at the precise secon they should. The navigator has many aic such as: stopwatches, WWV converters, pre cision oddometers calibrated in one-hundredth of a mile, and various types of calculators an charts. Each car in the "Ohio 24" was equippe with such aids. Some of these aids are rathe costly, so are used only by the serious rallyis

The 1958 "Ohio 24" drew 64 contestant from 12 or more states. Two competing car were owned by amateurs, a W3 from Pennsyl vania and a W8 from Ohio. The winning ca had a total error of 182 seconds for the tota of 850 miles. This indicates the high degre of precision which must be adhered to.

The "Ohio 24" being a National Event o the SCCA gave the competing cars and crew points toward the national SCCA rally cham pionship. This being a hobby, the only othe rewards for winning were trophies, plaques and pins. (One might draw a simile betwee rallying in the sports car group and competin in DX Contests or other contests in the ham radio field.)

The "Ohio 24" rally course consisted o three stages each starting in Mount Vernon going to some point in the state, and returnin to Mount Vernon. The job which the MVARC and those assisting had to perform was to pro vide communication between the various check points and rally headquarters. The stations a the checkpoints sent the exact arrival times o each car and any other pertinent rally traffic When the information was received at K8EEN in rally headquarters, it was given to the rally officials who computed the score of each ca from the information given. Thus, each car' score could be known a short time after it arrival at the last checkpoint.

The participating cars started at various points nearest their homes on Friday morning. The run from these starting points to Mount Vernon constituted the first portion of Stage 1. The five starting points were: Brecksville (near Cleveland) where W8CTZ, Warren Sladsky handled traffic, (Warren was an invaluable aid throughout the rally by assisting with traffic relays, etc); Washington Court House where no station was available; Steubenville where W8COL, George Cliff handled the traffic; Maumee where W8UPH, Bob Gensler handled the traffic; and St. Mary's K8BYP, Wilbur Campbell handled the traffic. The cars left these towns at half hour intervals, starting at 0900 EST from Brecksville, 0930 from Washington Court House, etc. The cars all had arrived in Mt. Vernon by 1200 EST. There was a safety check and all engines were sealed in preparation for the remainder of the rally.

The second portion of Stage 1 began at 1300 EST. The cars were started at two minute intervals from the Knox County Fair Grounds (1½ miles outside the Mount Vernon city limits.) The course took them to Millersburg where the checkpoint was located, and then back to Mount Vernon. Unfortunately W8JMC who was to handle the Millersburg traffic, was unable to do so for reasons beyond his control. (We appreciate his effort toward assistance anyhow.)

Stage 2 started Saturday morning at 0800 EST. The route for the first portion of Stage 2 went to Brownsville and back to Mount Vernon. The second portion of Stage 2 started at 1300 EST, in Mount Vernon and went through Southeastern Ohio. This portion of the rally was probably the longest, having three checkpoints. The three checkpoints were: Athens where W8PGQ, Wilson Norris handled the traffic; Marrietta where W8VZ, Carl Anderson, and members of the Marietta Radio Club handled the traffic; and Brownsville where W8PEN/8, Royce Woodward MVARC president, handled the traffic. There apparently is little amateur activity in Brownsville, so W8PEN setup a rig in his station wagon at the Brownsville checkpoint. The cars did not return to Mount Vernon for the end of Stage 2, but started Stage 3 from Brownsville.

MVARC members at rally HQ, K8EEN/8. Front row: K8AKK, W8PEN, Lloyd Goumer, Marc Woodward, W8OPU, Tom Reasoner. Back row: W8FEM, W8NTP, Dave Nash, W8ZIO.

The cars left Brownsville at approximately 1830 EST, on a course which took them through the Senecaville checkpoint where W8LG, Harry Colley of Caldwell handled the traffic. This course eventually returned them to Brownsville where the final portion of Stage 3 was started. All of the cars had left Brownsville by 2115 EST, so W8PEN/8 was allowed to secure operation, pack up the gear, and return to Mount Vernon. The run from Brownsville to Mount Vernon constituted the second portion of Stage 3, and the end of the rally, so K8EEN was dismantled and returned to its home.

Sunday at 1100 EST the final event of the "Ohio 24" took place. This event was a Regularity Run in which only the top 20 cars in the rally were allowed to participate. The course was restricted to roads in Knox County (the county Mount Vernon is the seat of), so mobile units had to be used to provide communication. This event was similar to the previous rally stages, but had 7 checkpoints all but the last of which were hidden. The MVARC group did not have the necessary 7 mobile rigs, so W8OPU asked the Air Force MARS Mobile Group from Columbus, Ohio to provide communication for this event. They gladly consented and a very fine group drove to Mount Vernon to assist. The members of the group who came and did a very commendable job were: K/AAF8AEH, Wilbur Wallerman; W/AF8BSM, Robert Massie; W/AF8HPB, Phillip Will; W/AF8KVV, Ronald Bryant; W/AF8MDX, Ed Enderle (who was the base station at the start and finish line of the regularity run); W/AF8MEG, Paul Heinlein; W/AF800W, Neil Stanfield; W8QEM, Starling Hutt; W/AF8QFU, James Enderle; W/AF8RNZ, Russel Forgrave; and W/AF8RSF, Bruce Hunter

The members of the Mount Vernon Amateur Radio Club whose efforts made our participation in this rally possible were: W8OPU, Al Watts; W8OPV, Dotty Watts (Al's wife, whose role can be best explained by Al); K8AKK, Bob White; W8CPU, Jim White; W8FEM, Dick Sowler (a sports car fiend!); W8FNW, Jim Ashton (another sports car fiend!); W8NTP, George Barnes; W8PEN, Royce 'Woody' Woodward; W8ZIO, Lewis O'Brien; Mike Gilchrist, Dave Nash, Jack Peterman, Tom Reasoner—KN8??? (on its way), Doug Rhodes, Curt Robbins, Al Schick, and Vincent Spencer—KN8??? (on its way).

The members of the Mount Vernon Amateur Radio Club, and, I'm sure, the officials of the "Ohio 24" National Sports Car Rally are very grateful for the excellent cooperation received from all who participated in this communications effort. This is without doubt, indicative

[*Continued on page 117*]

more about the "MINIBEAM" – part II

by Capt. G. A. "DICK" BIRD, G4ZU

94 Shirley Way, Croydon, Surrey, England

The Super Minibeam

The standard version of the Minibeam was described in detail in the March '57 issue of CQ Magazine. An economy design, and various methods of feeding it with coaxial cable, were dealt with in part one of this present article last month.

It is now proposed to describe some more ambitious designs that have been developed, with the object of improving the twenty meter performance.

It must be emphasized that these more complex versions are intended mainly for the specialist, who is prepared to go to considerable trouble in the interests of an outstanding signal on every band, and they should not be attempted by the beginner. Some previous experience with the construction and tuning of beams is practically essential.

Three Elements on Twenty

To refresh your memory, the standard Mimibeam is shown in fig 1. It operates as five e
ments on 10m, three elements on 15m, and ju
two elements on 20m. The inexperienced mig
feel tempted to lengthen the director to 21 fe
and resonate it on three bands in a simil
manner to the reflector. This would give thr
resonant elements on twenty (and six on ter
but unfortunately it would give little increa
of gain on twenty metres. Although a *two* el
ment beam will work fairly efficiently with clo
spacing (0.1λ or about 7 ft on 20m), as so
as a change is made to *three* elements it b
comes necessary to use much wider spacing
minimum of 0.15λ or about 10 ft. on 20m
To make effective use of three elements on
metres you must increase the length of th
boom from 12 ft to at least 20 ft. Measur
ments on a beam modified in this way indicat
that the gain, and in particular the F/B rati
were considerably improved as compared wi
the standard version on 20 metres. The pe
formance on 15 metres was also improve
but to a smaller extent. On 10 metr
however, it was found that the F/B rat
had practically disappeared, and the ga
was not up to standard, mainly becaus
the element spacings were now too wide f
efficient operation on this band. This was co
rected by placing an additional director
front of the driven element. Fig. 2. The leng
and spacing of this ten metre director we
found to be fairly critical for best F/B rati
The optimum length will, in general, lie som
where between 16 ft. and 16 ft. 3 ins., with
spacing of approximately 3 ft 6 ins. from th
driven element. The final step was to careful
adjust the resonant frequency of the three ban
director on ten metres. This was accomplish
by connecting a small variable condenser acro
the end of the stub at the point where it co
nected to each half of the element. The fun
tion of this condenser will be understood fro
an examination of Fig. 3, in which the indu
tance of the twin boom has been represent
by a lumped inductor, L_1. On 20m L_1 provid
inductive loading, with a certain amount

A TWO BAND MINIBEAM built with scrap dural by George Guy. G8TH. From a location which he aptly describes as 'a hole in the ground' he puts a good signal into the States, and by tuning the feeders he also manages to resonate the thing on 20 and 40 metres!

hunt capacity due to the capacitive reactance of the stub and variable condenser C,. On 15 metres, the stub, being a quarter wave long, behaves as a short circuit, and C, has no effect. On 10 metres, an effective short circuit appears at the point x, one quarter wave from the open end of the stub. The remaining portion of the and this will appear in parallel with the inductance of the twin boom represented by L,. The stub will therefore have an inductive reactance, combined inductance is tuned by C, so as to excite the two halves of the director after the style of two half waves in phase. See Fig. 4.

The resonant frequency of the *reflector* is much less critical on ten metres and additional capacity will generally not be necessary. Due to the greater length of the element, the capacity of the stub to the inside of the boom members plus the capacity of the mounting channel is normally sufficient to bring the resonant frequency of the complete assembly to around 25 - 27 mc, and this will produce good reflector action over the 11 metre as well as the ten metre band.

The only thing needed to complete the job was a label. After some thought I settled for 'Super Minibeam', to distinguish it from the standard version.

Tests were also made on an alternative design, Fig. 5, with a 25 ft. boom and additional two band director for 10 15 out front, but the approach of Winter prevented detailed performance figures being obtained.

With the object of obtaining the maximum of information in the least possible time, two local amateurs co-operated by building and testing several other element combinations. G2PL, who had been using a home built Minibeam for some time, made careful checks on the improvement that could be obtained by using a full length 35 ft. reflector on the beam at slightly greater spacing than normal. Numerous tests indicated that although there was some increase in bandwidth, there was only a small improvement in forward gain. He also made measurements on several other designs, both at his home location and at an open site in the country. One which aroused quite a lot of interest was a collapsible version of the economy model, which he designed so that it could be folded up and stowed on the luggage rack when he was operating under field day conditions.

A great deal of help and encouragement has also been received from the well known DX operator G3HLS. At considerable expense he developed a self supporting telescopic mast which at the touch of a button he could rotate or shoot up from 15 to nearly 100 feet above the ground. This greatly speeded up the tests on successive designs from the standard Minibeam through several coax fed versions, to the coax fed Super Minibeam which he is using at the moment.

Others who deserve mention are G8TH, who conducted exhaustive tests on the two band version, and several overseas stations, such as VS2DQ and VK6GU etc. who experimented with the more complex designs.

The Super Minibeam under construction.

Due to the relatively small market this side of the pond no manufacturer has so far been found who is willing to finance the development of amateur antennas. All this work has been undertaken voluntarily, and at the personal expense of the various amateurs concerned. Their only reward is that others may benefit from their efforts.

Tuning and feeding

It is not possible in the space of one short article to impart all the detailed knowledge which is required in tuning a beam for maximum performance. Advice will however be given on the order in which the adjustments should be made as this will ensure a planned approach and will avoid a lot of wasted time and effort.

It is suggested that the beam be tuned first on *fifteen* metres by adjusting the lengths of the director and reflector. The lengths specified will generally be found to give good F/B ratio and gain, but this should be checked on a field strength meter making a careful note of the readings. Now put a physical short across the centre of the director and reflector, and recheck the readings. If the shorting stubs are doing their job there should be no change. (A short circuit across a short circuit is still a short circuit!) If you do find any marked change in performance, it is essential to get the shorting stubs right before going any further. Once things are correct on fifteen metres, lock the elements at the optimum length and from now on leave them strictly alone!

The next move is to tune up on *twenty*. Slide the shorting bar on the twin boom for the director until you can strike a neon off the end of the element. This will show it is somewhere near resonance. Repeat for the reflector. Now adjust settings very carefully with the aid of a field strength meter for best gain and F/B ratio.

Finally tune on *ten* metres. Adjust the length

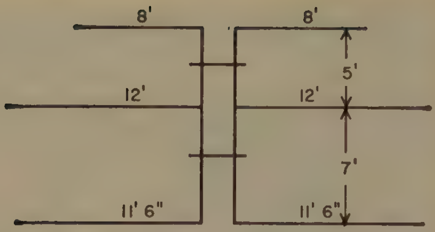


Fig. 1—Standard Minibeam

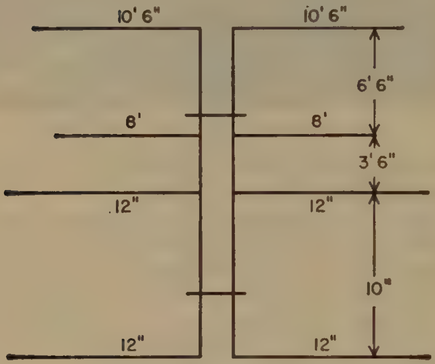


Fig. 2—Super Minibeam

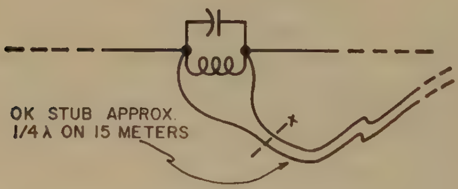


Fig. 3.

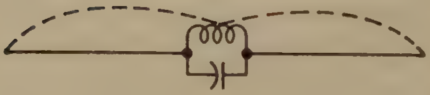


Fig. 4.

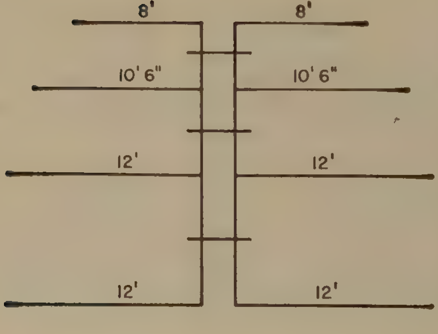


Fig. 5.

of the 16 ft. director. Then tune the small cc denser on the three band director. If you ha to add more than about 15 to 20 mmfd would be advisable to recheck the direct tuning on *twenty* metres. Preliminary tuni can be conducted with the beam about 9-10 off the ground. The ten and fifteen adjustmer won't shift much when the beam is raised. T change on 20 metres will be rather more pr nounced. but if you don't bolt up the shorti bars too tight, you may be able to tap the along the boom with the aid of a wooden pc when the beam is in its final working positio This is probably easier than trying to adju element lengths, as would be necessary with normal beam!

And now the feeding problem! If you fee the beam with 450 ohm open wire TV li there will *be* no feeding problem. You wo have to worry about standing waves or mate ing or the exact length of the feeder or th driven element. Simply treat as a tuned lir and couple via an antenna tuner which will c a good job holding back your harmonics.

If you favor a little more hard work no for the sake of less effort in the future, try th auto match with specified feeder length described in March '57 CQ.

If you are *determined* to use coax feed a the way, and most amateurs have a leaning i that direction, then you must remember sever important points.

1. The impedance of a beam is very muc a function of site conditions and height abov ground.

2. The impedance won't vary at the sam rate or in the same direction on each ban with changing height.

3. With a long feeder run you can easily los half your power before it even gets to th beam.

4. If you are concerned with covering a amateur band as opposed to a spot frequency do *not* match the impedance of the beam t the feeder. This may sound crazy, but a examination of Fig. 6 will show that the lowes *average* SWR is obtained when the impedanc of the beam at resonance is *lower* than th feeder impedance. The approach is somewha akin to two point tracking with a receiver, an is obviously better than a precise match at th centre of the band (dotted curve).

After all that, if you *still* want to have a g at coax feed, you have the choice of th methods given in part one of this article. I would take several pages to cover the theor of Fig. 8 (coaxial sleeve with bi-nodal cou pling) and at its present stage of developmen it requires a degree of precision engineerin which would only be justified for a productio run. The parallel dipole method is probabl best for home construction. You can easil load the 20m section if you want to reduce th total span (Fig. 7).

I am already getting enquires as to whe the Super Minibeam will be on the marke

Maybe some manufacturer will get interested in building Super Minibeams in the States, Canada, or some other country. Meantime I can get busy on a Super Super Minibeam!

In closing, I would like to say thanks to the many people all over the World who have been kind enough to write. Their appreciation makes me feel that the hours I have spent cutting up dural were not entirely wasted.

Technical notes

Stubs for Super Minibeam. All of 300 ohm ribbon.

Director stub res. freq 22-23 mc app. length 9 ft.

Reflector stub res frequency 19-20 mc. length 10 ft.

Shorting bar settings. Dir. 30-40 ins. Ref. 35-45 ins.

Twin boom. 1½ to 2 ins. diameter, spaced 3½ to 4½ ins. between centres. Elements 1 inch or larger.

Directors and reflector shorting stubs are inserted one in each leg of the twin boom. Average weight complete with cast mast head fitting: 35 pounds.

Gain and F/B ratio

The writer is fortunate in having access to gain measurements made by the Research Station of the Dept. of Scientific and Industrial Research and other similar bodies. These make it clear that gain figures obtained under carefully controlled conditions for the same antenna at different sites can show variations of as much as plus or minus 50%. There is an obvious temptation to quote the best figure obtained, and this course may well be adopted by some manufacturers for advertising purposes, but it can hardly be regarded as scientifically accurate. On the other hand, a really honest assessment may not look too impressive when compared with the optimistic claims which are constantly being made for various types of antenna configuration. I have therefore decided that, as a general rule, publication of gain figures is undesirable, and that a design which is basically sound will soon establish its own reputation by giving consistent performance under competitive working conditions. In the long run this is the most certain way of finding out whether a design is good or bad.

References

Reprints and summaries of the original article on the Minibeam have appeared in the National Amateur Magazines of the following countries. France, Holland, Denmark, Germany, Norway, Russia, Finland, Portugal, Malaya, Australia, New Zealand, Czechoslovakia, Spain and the Latin American countries.

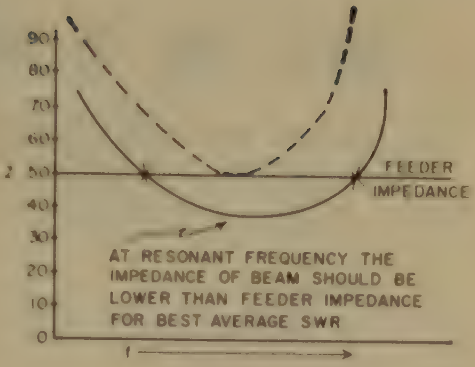


Fig. 6

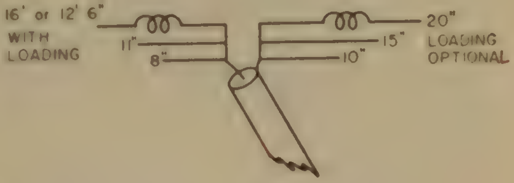


Fig. 7

Other experiments

The designs given in this article represent only a small fraction of the various element combinations which have been tested. The experimentally minded may care to try some of the following suggestions.

(1) *Director on 20.* It is well known that with close spacing a director tends to give better F/B ratio than a reflector. As there is very little interaction between the tuning of a Minibeam from band to band, it is quite easy to resonate the reflector as a *director* on 20m without seriously affecting the performance on the other two bands. Several cases have in fact arisen in which users of the Minibeam have by mistake, set the reflector shorting bar too far out along the boom with the result that the beam fires backwards on 20m. Under these conditions a good F/B ratio is obtained over a limited frequency range. G6ZO has tuned his Minibeam this way deliberately. The fact that the beam fires backwards on 20m under these conditions is not necessarily a disadvantage because long distance DX normally comes in by the short path on 10 & 15, and by the long path on 20m. A constant beam heading can therefore be maintained on all three bands for contacts with a particular area such as the Far East. Setting the beam up in this manner requires no alteration in element length or spacing. Merely an adjustment to the 'reflector' shorting bar.

(2) *Longer elements on 20.* There is a fairly widespread belief that shortened elements en-

Continued on page 106

RULES: 1958 CQ WORLD WIDE DX CONTEST

I. CONTEST PERIOD:

Phone Section—0200 GMT October 25 to 0200 GMT October 27.
CW Section—0200 GMT November 29 to 0200 GMT December 1.

II. BANDS:

The contest activity will be in the 1.8, 3.5, 7., 14., 21., 27., and 28. mc amateur bands.

III. TYPE OF COMPETITION:

1. Phone Section. (a) Single Operator. (b) Multi-operator.
2. CW Section. (a) Single Operator. (b) Multi-operator. (c) Novice operator.
3. Inter-club.

IV. EQUIPMENT:

There is no limit to the number of transmitters and receivers allowed, and competitors may use the maximum power permitted under the terms of their license.

V. SERIAL NUMBERS:

Phone stations will exchange serial numbers consisting of 4 numerals, the first two being the RS report, and the last two being their own Zone number. CW stations will exchange serial numbers consisting of 5 numerals, the first three being the RST report, and the last two being their own Zone number.

Stations in zones 1 thru 9 will prefix their Zone number with zero. (01 and etc.)

VI. POINTS:

Contacts between stations on different continents will count 3 points. Contacts between stations in the same continent, but not in the same country will count 1 point.

Contacts between stations in the same country will be permitted for the purpose of obtaining a Zone and/or country multiplier but no QSO points are credited. More than one contact between stations on each band will not be permitted.

VII. MULTIPLIER:

Two types of multipliers will be used.

a. A multiplier of 1 for each Zone contacted on each band.
b. A multiplier of 1 for each Country worked on each band.

VIII. SCORING:

1. The score for each Single Ban
is the sum of the Zone and Cou
try multiplier for that band, mu
tiplied by the total contact poin
on that band.
2. The total All Band score is th
sum of the Zone and Countr
multipliers of all bands, mult
plied by the sum of the contac
points on all bands.
3. Everyone who sends in a log fo
a single band is eligible for
Single Band award only. If
log is submitted for more tha
one band, indicate which ban
is to be judged, otherwise it wi
be judged as an All Band entry
4. Those who submit a log for tw
or more bands will be judged fo
the All Band award.
5. A station is not eligible for mor
than one award.
6. Single operator contestants mus
show a minimum of 12 hours o
operating time to be eligible fo
an award. If a contestant oper
ates all bands and wishes to b
judged for a specific single band
he must show a minimum of 1
hours on that band.
7. Multi-operator stations mus
show a minimum of 24 hours o
operating time to be eligible fo
an award.

IX. ZONES AND COUNTRIES:

To check your own Zone numbe
and country for scoring purposes
refer to the ARRL or CQ list as wel
as the WAZ map. The continenta
boundaries used for WAC will be
recognized. Should any question arise
as to the positive location of a station, the official definition will be
final.

X. AWARDS:

Certificates will be awarded in each
section as follows:

1. To the highest scoring station o
each Single Band in the follow-
ing areas.
    a. Each call area of the U.S.A
    b. Each call area of Australi
and Canada.
    c. All other countries.

[Continued on page 111]

the Viking "Navigator"

by Donald L. Stoner, W6TNS P. O. Box 137, Ontario, California

One of the first things that impress you, hen you build a Johnson kit, is that they do ot skimp on parts! As I unpacked the box ontaining the cabinet and components I was minded of the old comedy routine where the ttle Crosley pulls up and about ten very tall eople unfold from the interior. I wondered how ey ever got half the inventory of a wholesale ouse into such a small box. As I added the apacitors and resistors I was sure that someone ack in Waseca was playing a joke on me. aturally they all fitted neatly into place, eventally, and the transmitter worked on the first st

This was my first encounter with the E. F. ohnson Company Viking "Navigator". Later I as to find out what owners mean when they y the "Navigator" is a "cw man's cw rig". ohnson Company has filled the gap between w cost Novice rigs and compromise phone/ w transmitters. The Navigator is designed rom the rubber feet up, for the best possible w performance.

The Viking "Navigator" is a self contained FO and exciter, and with an input power ting of 40 watts may be used as an exciter r transmitter. It will deliver about 27 watts n all amateur bands between 160 and 10 eters. Like other units in the Viking series, e "Navigator" is nicely packaged and styled n extremely good taste. The cabinet measures 3¼" wide, 10-1/16" deep, and 9⅛" high. he complete transmitter weighs in at 22 ounds and although very compact, the case is ell ventilated. The operating controls are rouped on the front panel for maximum operating convenience. No reaching around to he side or rear to make adjustments. The key ack, relay jack, and antenna connector are ocated on the rear chassis apron so that all lugs and cords are out of the way. As with ll other Viking transmitters, the "Navigator" is ompletely de-TVI'ed. Even the two crystals re located behind a dummy knob cover on the ront panel. TVI signals are completely bottled p from every angle. A pi-network output circuit also serves to attenuate VHF harmonics nd will match unbalanced resistive antenna oads from 40 to 600 ohms impedance.

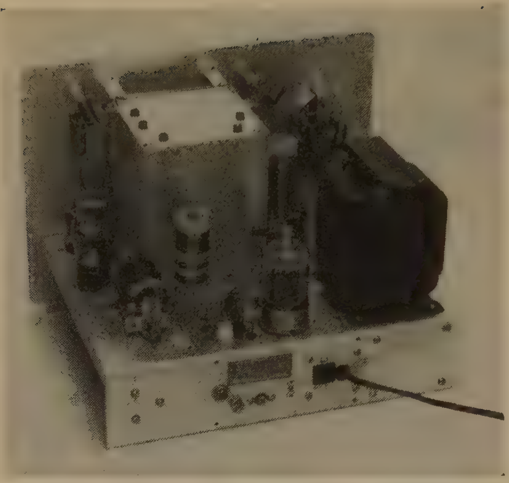
Circuit Description

Exciter. The exciter section consists of a AU6 (V2) variable frequency oscillator and 6CL6 (V3) crystal oscillator/multiplier. The 6AU6 serves as a high stability voltage regulated and temperature compensated electron coupled oscillator. It is equipped with two separate tank circuits, one covering the range 1.75 to 2 mc, for output on 160 and 80 meters. The other tank is used on all higher bands and tunes 7.0 to 7.4 mc on 40, 20, 15 and 10 meters. On 11 meters a shunt capacitor lowers the VFO to 6.725 to 6.84. The 6CL6 oscillator/multiplier serves as a frequency multiplier with a high "Q" plate circuit operating on the same frequency as the final amplifier on all bands. There is no doubling in the "Navigator" final amplifier.

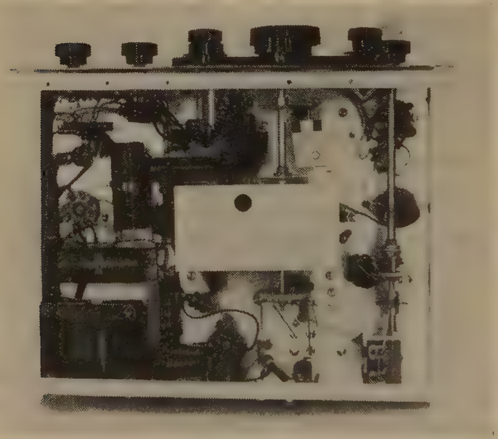
Final Amplifier. The final stage employs a 6146 tube (V6). The amplifier is tuned to resonance by C8, operated from the front panel by the dial marked Final. The screen of the 6146 is regulated to protect the tube when no excitation is applied. Bridge neutralization is employed to provide high stability over the entire frequency range. A switch and variable capacitor arrangement provides for coarse and fine antenna loading.

Power Supplies. Two supplies are used to power the "Navigator"; the high voltage plate supply (nominally 360 volts in the transmit position) and the negative 150 volt bias supply. The supplies are energized by the operate switch SW4, and protected by two 1½ ampere fuses located in the line cord plug. The screens of

Meet the Viking "Navigator". A beautiful job of packaging a 40 watt cw rig, complete with a VFO and Timed Sequence Keying. It operates on all bands, 160 through 10 meters.



Rear view of the "Navigator". Note the TVI filters on the pilot lamps and the grid drive/plate current meter. The modulator jack added by the author for tests can be seen on the rear apron.



The large plate in the center is the buffer shield. Just forward of this shield is the cam for changing the VFO bandchange switch. The parts are neatly grouped to produce a commercial looking wiring job.

the VFO and final amplifier are clamped by V5, a VR-150 voltage regulator tube. 117 volts ac is available at jack J3, for the antenna changeover relay, whenever the transmitter is energized.

Timed Sequence Keying. You may have heard of timed sequence keying but may not understand what it is, or why it is necessary. TSK eliminates two of the biggest bug-a-boos of cw operation; "chirp" and "key clicks." Whenever a VFO is keyed, the frequency will change slightly until the VFO tube reaches its normal operating conditions. We call this frequency change "chirping." The "Navigator" circumvents this problem nicely with timed sequence keying. When the key is depressed, the VFO starts to conduct. As soon as it "settles down" on frequency, the buffer is gated When the key is released the VFO contin to oscillate until after the buffer ceases conduct. Even though the VFO still "chir you never hear it on the air because it ne reaches the final amplifier. Of course all t happens in a small fraction of a second. Wh the keyer control is properly adjusted it w follow a "bug", even with the weight off! breaking station can be heard between the d too!

Timed sequence keying also eliminates "k clicks." Whenever a transmitter is keyed, sudden disturbance to the circuits creates w is known as a transient. Did you ever not when you plug your headphones into the pho jack you often hear a "click" just before sound starts? A similar thing happens in yo transmitter. When you depress the key, sudden rush of current through the tank c causes it to ring. The ringing, which occ just before the oscillation, is propagated a "click." As we all know, these clicks can heard many kilocycles away from the carr frequency. In the "Navigator," the initial su of current is slowed down or "softened," by action of the keyer tube. The action is so p nounced (the softness of the signal) that trained ear can easily detect a transmitter usi TSK. It is very pleasant to listen to, inde

Kit Construction

Assembling a kit is a time consuming jo The completeness of the Navigator makes more so. Although the assembly instructions a clearly written and easy to understand, t job cannot be rushed. There are many co ponent designations that sound like others a if the job is hurriedly wired, one might g parts interchanged. The VFO is wired as separate unit and then connected to the chas at the proper time. The laced harness makes an easy task to complete the basic wiring. He again the constructor should follow the i structions carefully for serveral wires of t same color fan out near each other. Switchi wires can cause no end of trouble. The kit to about 15 hours to complete, the counting t calibration and testing.

Performance

I must confess that I am not what you wou call a "red hot cw man." I felt that it would much fairer if it were put on the air by som one that could really "push a paddle." Accor ingly, I dashed over to the Mel Thom (K6GOK) QTH, like a brand new mother wi her first offspring. Mel spent at least an ho just running his hands lovingly over the ca with a glassy expression on his face! Becomi impatient, I set him in the nearest chair, wip the fingerprints off the cabinet and hooked the "Navigator."

The acid test for a VFO is a few hours ope ation on 10 meter cw. After a small init arm-up drift, the VFO stabilized. Mel used a g just as fast as he could push it and there as no evidence of key clicks or chirps. The ined sequence keying is not employed on ystal control and some clicks were observed. ey were easily cleaned up with a standard y click filter. During the tests many stations ere contacted including Haiti, Columbia, So. frica, Argentina, Mexico, Canada, and all the nited States call districts. All stations showed keen interest in the transmitter and reported 9 plus quality.

As further test Mel used the "Navigator" to ive an 813 rig. There was more than enough ive for the 813 and, as one might suspect, e general run of signal reports was somewhat gher.

During all the tests, the "Navigator" was ed in conjunction with a Johnson 250-20 w pass filter. No interference to any television ceiver was noted. The transmitter is very ean and free of spurious radiation. The conols all operate smoothly, with no sharp peaks at might suggest regeneration.

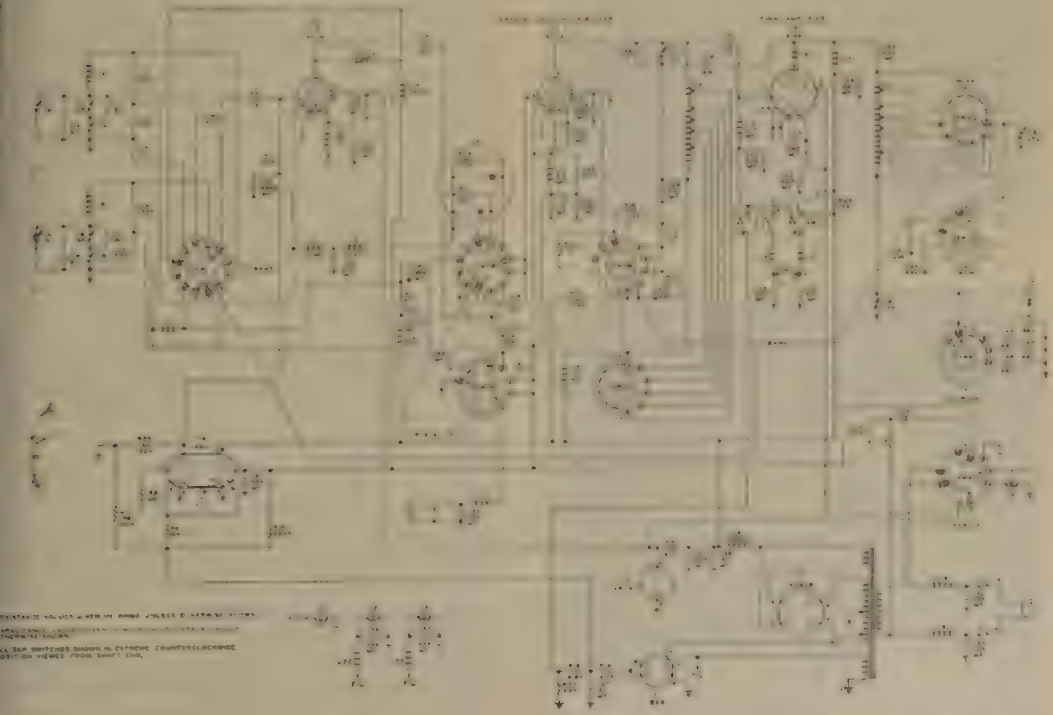
A3 Operation

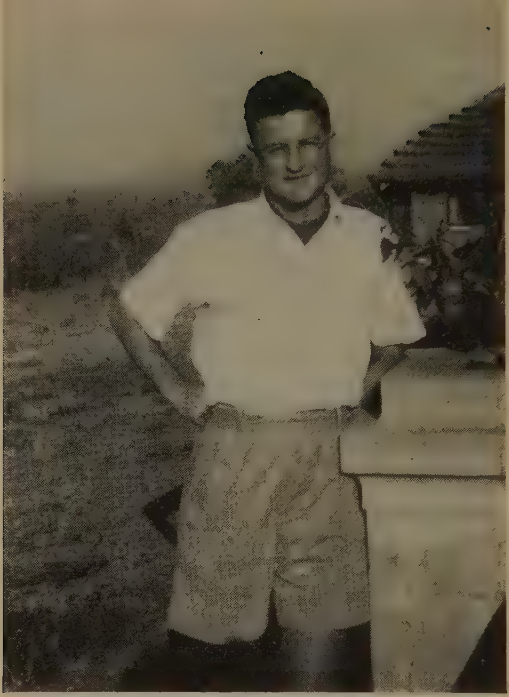
It seems like sacrilege to even suggest moduting such a beautiful cw rig but there will no oubt be hams like Mel that want to. It can be one with a minimum of effort and without utchering" the "Navigator." A four pin Jones nnector was mounted just to the left of the ower cord grommet. This connector may be en in the rear view photograph of the "Navator." The orange wire that connects between R23 and C39 was clipped and each lead connected to one of the socket pins. For cw operation, a jumper is placed across these two pins to complete the circuit. The filament circuit was connected to the third pin of the connector and a wire was connected from the transmit pilot lamp (I14) to the remaining pin of the connector. The modulator consists of a pair of 6L6's operating from a separate power supply. Two six volt relays are employed in the control circuits. One completes the 117 volt circuit to the modulator, when the filaments of the "Navigator" are turned on. The other relay is connected to the modulator B plus circuit and is energized when the "Navigator" is switched to transmit. On the air tests at K6GOK's QTH showed that the Navigator was easy to modulate and all reports were favorable.

Conclusions

About my most violent complaint of the Navigator is the use of a "phono connector" for the antenna output. This type of connector does not impair the operation and it seems sturdy enough. I just don't like them! They look much better on the $19.95 hi-fi amplifiers etc. Simply a whim of mine.

The Navigator kit (catalog #240-126-1) goes across the counter for $149.50 while the wired and tested unit (catalog #240-126-2) is available at an amateur net of $199.50. All things considered, if you are a cw man at heart, it is a small price to pay for maximum flexibility and probably the finest cw note ever heard on the air. ■


L TAP SWITCHES SHOWN IN EXTREME COUNTERCLOCKWISE
OSITION VIEWED FROM SHAFT END.



Bwana Crutchfield, W7GFM, in working togs. Seattle was never like this!

FRUSTRATION IN VQ5

by Dr. J. A. Crutchfield, W7GFM
P.O. Box 12, Malindi, Kenya

So you think you have troubles, do you? Crowded bands, six KW's in the neighborhood, TVI, and that broken 4X1000 bothering you a bit? Well, brother, simmer down—you don't know how tough things can get. Picture yourself in a lovely cool cottage, looking over a lake, at 4,000 feet. The yard is big enough for W6AM's antennas, and there's a neat little corner of the verandah where the Ranger and the SX-71 are waiting to be unpacked. And all this is in Entebbe, Uganda, in the heart of East Africa, where the ham population is as thin as a restaurant steak and QRM is just a word in the handbook. What more could you want? A ticket, OM—a little piece of legal wording—but you aren't going to get it, and there is a well equipped monitoring station down in Nairobi, just in case your thoughts turn to a little independent assignment of call signs. So you will just crank up the receiver, listen to all that beautiful DX rolling in, and suffer. I know; I've been doing just that six months!

Let me hasten to add that this sad state affairs is not due to the local authoriti Everyone in Uganda, from the hams to t Ministry of Corporations and Communicatio made every effort to obtain a license for m particularly since I was posted here by t Food and Agricultural Organization of t United Nations to assist in the developme of the commercial fisheries. The flat refu of the United States to consider recipro licensing of amateurs makes it impossible f American hams to raise a voice when simi restrictions are adopted by other countries.

Apart from the crucial license proble which is beyond local control, the ham ga in Uganda, in the best amateur tradition, h done a tremendous amount to add to our e joyment of this intriguing country. We r into Bill Campling, VQ5EK, soon after o arrival, but had only a few visits with hi before he went on leave. While hunting f Bill's QTH in Kampala, I spotted the famili outlines of a 20 meter beam, and before knew what had hit me I was enjoying a b of wet with VQ5AU and his family. Ernie p me in touch with the other Police Radio ham VQ5GJ and VQ5DM, and with the sage of th Posts and Telecommunications, Fred Coo VQ5EC.

The fraternity of ham radio has never bee so welcome to us. When it appeared that w would be without housing for a month th wheels started to spin, and within two wee I was installed in VQ5AU's house, usi VQ5EC's bedding, crockery and cooking ute sils, with Fred's XYL Beryl, standing by make sure that my family was fed and tran ported while I was out on the lakes. When th same problem arose again a few months late Frank, VQ5GC, and his XYL arranged f their lovely house—complete with V beam ar HRO—to be assigned to me for the duratio of my tour. But even more than these thing the feeling that we were always welcome drop in for a cup of tea and a chat meant great deal to us throughout our visit.

Conditions out here are quite a shock to pair of ears hardened by the blasting of th American ether. You can imagine your ow reaction to a completely vacant 75 meter pho band and to a 20 meter band in which the on solid signals are found from 14200 kc dow As in all equatorial regions 80 and 40 are noisy that they are used almost entirely f local work. During one of the frequent thu derstorms that sweep over Entebbe from La Victoria the QRN is unbelievable. I did he a few W signals on 40, but none were real worth the effort of a QSO.

Conditions on 20 and 15 were much bett and at most times of the day or night both pr duce a hodge-podge of DX which we or dream about. The openings on 10 seem ther spotty, with ZS and ZE the only con- stent signals, but on occasion it produced me phenomenal signals from the eastern and idwestern areas of W land. I never could get customed to the blase attitudes of the local ams toward such calls as ZC4, FB8, FQ8, 3, SV and the like, or to their eagerness to ag the odd VK! Oh, well—we always say at it's all in the location.

If you are looking for that VQ 3, 4, or 5 SO, your best bet would be from 0300 to 500 GMT on twenty and from 1900 to 2100 MT on fifteen. Twenty also produces some cellent W signals out here in the late after- oon, but the European QRM is quite rugged, rticularly from the swarms of potent Rus- an signals. You may not believe it—I didn't ther—but you will do far better out here in e bush if you avoid the band-edge pile-up e the plague. Even stalwarts like W4IKM, 6MUR, and W8BKT get lost in that squeal- g mess!

It might be helpful to remember that every- ne in Uganda works from 0830 to 1200 on turdays. Most of the ham activity is con- ned to evenings and Sunday mornings. The sual rules about good DX operating prevail ith a vengeance. Like most British hams, e chaps in VQ5 are sharp, crisp operators. nd the VFO swishers, long callers, and zero eat artists are not likely to get that coveted SL. Don't get too impatient about your cards; rface mail to the United States takes two months or more, and the airmail rates are just o high to meet the countless requests for irect QSL. If you are like W7GFM, it will ke you about fifteen years to work VQ5— hy be in a rush for a card?

The exotic prefixes have become rather ommonplace by now, and the real thrill comes rom the occasional solid signals of old friends nd competitors. Perhaps it's just my traditional California loyalty—I held W6EEI for 6 years—but those bell-like booming signals f the top W6 cw stations stand out most learly in my mind and on the SX71. I hate o think what their light bills must look like t the end of the month

The VQ gang were given permission to oper- te on 50 mc a few months ago, but only a ew ZS and ZE contacts have been made thus ar. Frank, VQ5GC, is probably the most persistent VHF hound in Uganda, but his most memorable achievement to date is a severe case of the screaming jitters when he caught only the local end of some sensational ZS-W6 openings. There is a lot of 2 meter activity in Kenya, but it hasn't spread to Uganda as yet.

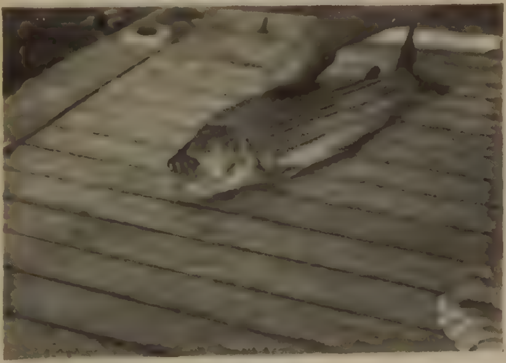
Gear is, of course, a severe problem for the hams in East Africa. Exchange restrictions make it almost impossible to obtain American equipment, and even British products are scarce and very expensive. I have a feeling, however, that the VQ prefix does more for the

[*Continued on page 94*]

A morning's catch of Nile Perch from Lake Albert—91 lbs.

My home away from home—Fisheries launch "St. Clair" at Butiaba.

Game Ranger Heppes with a load of confiscated poaching equipment.



An East African Tigerfish . . . Note those dentures!

A. V. C. (Automatic Visitor Control)

by AL AYLING, W6LFM 50 Palm Avenue, Mill Valley, Californi

This gadget was inspired one cold, rainy December night by a series of events that almost dislodged this amateur from "The World's Finest Hobby." Come back with me through the years to a certain evening which started out quietly in the shack.

It was late Saturday night, and 15 meters was just beginning to fold. I had called the last dying ZL and was straining to recognize my call in the QRN when the great oaken door of the manor shuddered with three thunderous knocks.

Strange, I thought, a caller at this hour. Can't be a TVI complaint. No new neighbors —but I suddenly recalled, there *was* a new neighbor! Most likely has a 21 megacycle I.F. I quickly switched off the rig, threw a dusty sheet over it, and laid out a game of solitaire.

With the door open just a crack, I was able to make out my nocturnal visitor by the light of the arc lamp on the corner. He was dressed casually, in sport clothes, sneakers and a mackinaw. Common costume for these fellows, I've found; makes it easy to hide an ax. His voice rose over the shrieking wind.

"I'm Joe Doakes, your new neighbor," he said. He was smiling, but I wasn't deceived for an instant. I kept the guard chain hooked.

"What do you want?" said I.

"Just paying a friendly call," he answered. "Heard you are an amateur radio operator. I wonder if I could look at your radios. Read about you fellows' work during the big flood. I've always wanted to see one of your stations."

While I was considering this, the wind tore loose a rusty downspout, and my visitor took a couple of gallons on the port side.

"Some other time perhaps," he said and started to back away. "It's a bit late tonight."

I decided to take a chance. "Come in," I said. The situation really called for a hearty handshake, beer, pretzels and the other social graces, but the months of hibernation in the shack had left their mark, (I was trying t WAZ) and I merely mumbled, "Pleased t meetcha."

I led my mysterious visitor down the step to the basement, through the trap door an down the ladder into the shack. I lit a candl and pulled up a couple of crates to sit on.

Fifteen had folded by this time, so I started to tune up on 40. Changing bands in this shack is a bit of an ugly job, what with winding the feeders around the honeycomb, plugging coils into the Super Wasp, tuning for maximum smoke, etc. Consequently, my visitor had time to get curious. He nosed around the rig, fiddled with the key, and asked a thousand questions Between trying to answer his queries and keeping his hands out of the power supply, I blew fuses, spilled coffee on the log, and broke my last 807. But I managed to patch it up, and at last, at last . . .

"We're ready," I said, and dredged up half a smile.

This was his cue. He wanted me to contact his mother in Ireland. "Get me Mother," he begged, with shining eyes. "She lives down the street from a ham in Dublin, so it should be easy."

As gently as I could, I broke it to him that talking to his mother was not in the cards. Now he was a nice chap, but this biased him to cut-off. In fact, regarding amateurs in general he was plenty negative. He carried on:

"These things are bad for TV, aren't they? The other night I was watching the fights, and . . . etc."

To counter this required recitation of the carefully worded statement the TVI committee had worked up, but I was tuning around for a station, so I lost the chance.

I called CQ and hoped for a good contact some friendly guy about eight states away who would be Q5 all the way with a voice as smooth as butter. If you've read this far, you know who I got—the town creep, eight blocks away nning 17 milliwatts to a filament modulated X-199, 2 kc's away from a sidebander.

I gave up. Confused and demoralized, I ly estimated what a home-brewed rig with est parts throughout would bring on the pen market. I would keep the Super Wasp because it was old and they don't make receivers e they used to. It was a fine, proud hobby hile it lasted, and a few of the brave ones ight carry on, but I was through—washed up. Sadly I followed my visitor to the door. He anished into the night convinced he had seen typical amateur radio contact made.

With a heavy heart I cast myself down on me old surplus tuning units. The candle d sputtered to a mere stub. Clearly, my happy ys in ham radio had come to an end. I pulled y cloak about me and drained the last drops Amontillado from the orange juice can. y gaze fell on a mouse who stared back rough the eye of a porcelain insulator. Suddenly, in the nebulous depths of my mind, an dea began to take shape!

I would devise an Automatic Visitor Control! Something to occupy my visitor while I red up the rig. It must put him in a mellow, iendly mood! Possibly Mumm's '28 and ancing girls? No—not enough space. Laughing gas? Might work. Space doesn't permit sting the possible solutions I considered. Just ke my word for it: the one I finally selected the best, the most effective, and, by all odds, e cheapest.

It is easily constructed from material found any shack. It requires no external power upply and uses standard parts throughout. No ath or theory is involved. You can assemble his gadget in one evening and run a KW with . Best of all, it has been tested on all bands nd really works. In all modesty (and it ill becomes me) I freely admit that it is the best hing for ham radio public relations since he development of the low pass filter.

Construction is deceptively simple. Merely eed a sheet of reasonably clean paper into he mill and pound out the following copy:

VISITORS PLEASE READ

This is the amateur radio station of "Spook," W6LNM & "Dirty Al," W6LFM.

We are licensed by the Federal Communications Commission.

Amateur radio is the hobby of thousands of men and women from all walks of life throughout the world. The special pleasure of building and operating radios may be compared to the thrill you got as a youngster from flying a kite you built or even to the satisfaction of driving a car skillfully. This feeling plus the prospect of meeting new friends on the air makes it a captivating hobby.

Amateurs are licensed after passing a code test and an exam in radio laws and theory. License information may be obtained from amateur radio supply houses.

This equipment does not interfere with TV providing the TV is of good design, filtered, aligned and operated properly and used with a good antenna.

Basic equipment:

Receiver (like a radio but made especially for amateurs)
Transmitter (Like the big ones but smaller)
Antenna
Microphone
Telegraph key

Our equipment is worth about $500. Other stations: $25 to $25,000.

Voice is convenient, but code gets farther and is simpler to build.

We are restricted to narrow bands of frequencies. One is near the broadcast band.

Talking to a certain amateur in a certain city at a particular time is a one-in-a-million shot for the simple reason that he may not be listening. This explains why we cannot contact your brother-in-law in Miami, etc.

Amateur operation is strictly for fun. Accepting money is illegal.

We talk of many things, including radio, the weather, our jobs and our families. If you are invited to say something, speak clearly and naturally about 3 inches from the mike, and say, "Hello. My name is . . ." Relax. The mike won't bite.

The exchange of QSL cards is a pleasant custom of confirming a radio contact. Copies of the cards we send are on the wall.

Amateur radio is good for youngsters because it interests them in science.

Repair of HI-FI, TV and table radios requires special skills which many amateurs do not have. We do not install or repair such equipment.

The display of old radio parts dates from about 1900 and is a gift of Mr. Paul Stanley, Howard Young (W6PKH), Dick Danford (ex-W6ECS) and others.

VISITING HAMS PLEASE NOTE

Get checked out on the rig before operating. If you operate, *Sign the log.*

Try to get it on one sheet of paper and use two columns. Its easier to read. Naturally there will be some changes. Insert your own call near the top instead of mine and my XYL's. Change the value of the station to $10,000 or whatever yours is. But don't make it too long. Visitors lose interest if it looks like the charter for the U.N.

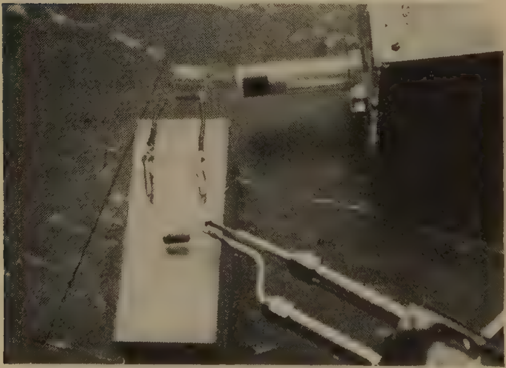
Operation is simple. Hand it to your guest, tune up the rig and call CQ. A.V.C. will automatically inform, befriend and entertain your visitor. While he reads, cue the gang that you're demonstrating the rig. Someone will come to your rescue, and from here on, it's up to you. ■

CURE DRIFT FOR 15 CENTS

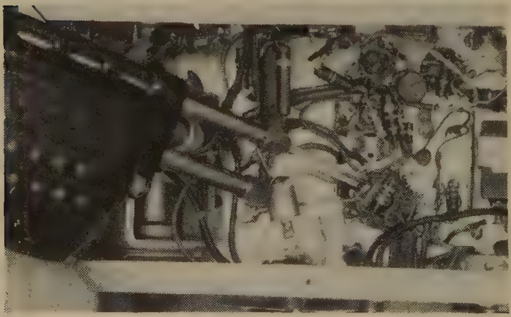
by A. D. Mayo, W5DF 209 Conti St., Jackson, Mis

According to CQ's survey there are many older receivers in use today. The art and science of ham radio has advanced since these receivers were designed and built to standards of bygone years. The very heart of a ham station is the frequency determining oscillator of the receiver, as well as that of the transmitter. Until recent years nobody heard much about temperature compensation of oscillators, and it might be safe to say that all of the older sets have time drift.

Rough check of temperature characteristic by heating condenser and checking frequency by GDO.



Soldering gun placed against outside of general purpose ceramic to check frequency change under heating.



Around 1947 I had a very good receive but the band edge at 14 mc moved 50 k during the first 20 or 30 minutes after it wa turned on. Being familiar with this shortcoming, I lived with it satisfactorily in that da and made compensations for the drift. Toda I would not tolerate it, and in fact could probably remedy it with little effort. This drif could probably be reduced to 5 kc or less b the simple installation of negative temperatur coefficient condensers of the correct value an in the correct location. These condensers ar standard parts today, but years ago nobod heard much about them, and the need fo stability was not as great then as it is now

Single sideband boys say the carrier reinserted in the signal should be accurate to withi 50 cycles of the original. The h.f. oscillator i one determinant of this frequency and mus be stable. To follow a sideband signal with my old receiver I might have to make 100 corrections in the dial setting over the first 2 minutes of operation. An exasperating situation. Herein may lie a lot of difficulty in SS reception with older equipment. Also, newe receivers are not immune to drift.

What To Do About It

If you are looking for a quick answer an cureall it is probably as follows in 9 times ou of 10. The drift is probably 10 kc at 3.5 mc and proportionately greater at higher frequencies, and is probably in a positive directio due to increase in inductance of the coil wit heating. It is probably correctible to 10% o the original drift by the installation of a negative temperature coefficient condenser 75 ppm/ degree C and the value of this condense will probably be 3% to 5% of the tota capacity in use in your tuned circuit. This i an extreme generalization, but chances ar even this is better than no compensation at al

Calculation is impractical so we make

ange, then check. The first step is to deter- ine the amount and direction of drift and ne of drift. Using any reference signal of nstant frequency you can check this during e operation period if it is not already known. the reference signal moves to a higher freq. the dial it is positive drift and has to be rrected by decreasing the capacity of the ning condenser. This is the usual case.

Causes Of Drift

The most common cause of positive drift is pansion of copper wire as it is heated, in- easing the coil diameter and therefore the ductance. Two hours may be required to ach stability, when the coil gets as warm as is going to get. Admittedly the change in e dimension of the wire is microscopic, but are measuring microscopic increments of equency. Few physical measurements indeed proach the accuracy with which we check equency every day we operate. A drift of 14 cles at 14 mc is one part in a million. Other equency determining parts are fixed or vari- le padding condensers and the oscillator tube.

There is a simple way to fairly positively entify the component responsible for long ne drift. A signal is tuned in and a soldering n is used to heat the leads to each com- nent. This should be done intelligently in ch a way that only one component is heated a time. Small condensers can be heated by uching the body of the part with the hot . Coils can be heated by placing the tip ng the winding, at a terminal, or inserting in a coil. When the iron is removed and a nal has moved several kc on the dial, you ll know the component just heated is at lt.

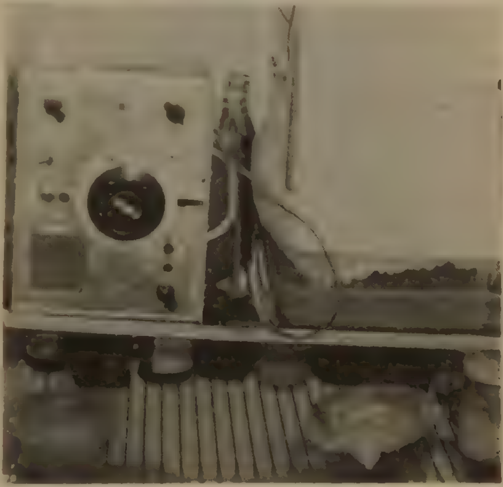
Be suspicious of any condenser. If it drifts der heating, and is replaceable with a zero mperature coefficient type it is best to re- ace the condenser. The reason for this is that e fewer temperature sensitive components u have, the easier it is to place the corrective mponents at the best spot regarding rate heating.

Drift due to changes in internal capacitance d characteristics of the oscillator tube is ually small and completes its movement with- 2 or 3 minutes time. If short time drift is rious, another tube might be tried.

Corrective Measures

Before proceeding with temperature com- ensation, and while on the subject of the scillator, it is well to check the parts over for ability of mechanical nature. Tuning con- enser shafts should be free from wobble, yet ove freely. If there are leads that can move nder vibration these should be replaced with rger, more rigid, wire and possibly addi- onally supported. A lead of hook up wire 3 inches long can and will vibrate to impart a bubbling sound to a signal, if this lead is close to oscillator components. It is better replaced with solid No. 12 wire, rigidly supported.

Soldering iron heats component to check oscillator drift.



For extreme checks, bring temperature of entire set down to lower temperature by placing in refrigerator several hours.

It is not generally recognized that non-conductors which can move in the field of a coil can also cause mechanical frequency instability, but they do. A dial cord or piece of plastic near a coil can cause trouble.

Assuming that we are to set out to correct drift caused by heating of the oscillator coil, the logical place to mount the compensating condenser is on the coil itself. When the condenser is installed, a trimmer somewhere will need to be decreased to keep the dial markings and calibration the same.

The capacity of this condenser is probably 3% to 5% of the total capacity in the circuit. If a bandset condenser is used to cover two bands, this may be a total of 300 mmf on one band while it is 75 mmf on another. I would split the difference and use 5% of 150 mmf or say about 7 mmf of 750 ppm/ deg. C compensation. There are some ceramic variable negative temp. condensers of a range of 5 to 20 mmf and one of these is ideal. Experience has shown that another rough check may be used for a quick indication of amount. With the compensating condenser mounted in place, crimped leads but not soldered, a dial check is taken of a signal. Then the leads are soldered and the signal quickly checked again. If the shift in frequency due to solder heating is about 4 times as great as the original drift of the set, you are on the right track. Then no further check of this compensation should be attempted for several hours while the components cool.

The next normal operating period will indicate whether the drift has been lessened, and whether more or less compensation is needed. If too much compensation has been added, the signal will reach a point of stability in 30 minutes or an hour and then a negative drift will start to come in causing reference signal to move to a lower dial frequency.

If the set reaches a period of stability in 30 minutes or an hour, but seems to drift fairly fast for the first 10 minutes or so it is very difficult to correct this. Some relief can be had by splitting the compensating condenser in two parts. One compensator is mounted directly on the tube pins. Most oscillator circuits will permit mounting from grid to a filament pin. This way the filament pin will more quickly heat the compensator. Sometimes the compensator can be mounted above chassis almost touching the tube shell, for faster take up.

It only takes a few minutes to make these changes and they can then be checked at leisure while operating.

Other Data

Very few fixed condensers are zero temperature units. Very few silver mica condensers are zero temp. For this reason I have abandoned their use in critical circuits and use ceram NPO. Most of the so called cheap gener purpose ceramic condensers have very hig negative characteristics and I have used the for compensation, with success. A quick roug check can be had by connecting a condens across a coil and grid dipping the frequenc Then a soldering iron is used to heat bo leads to the condenser. A N750 condenser wi move the resonant frequency about 5%.

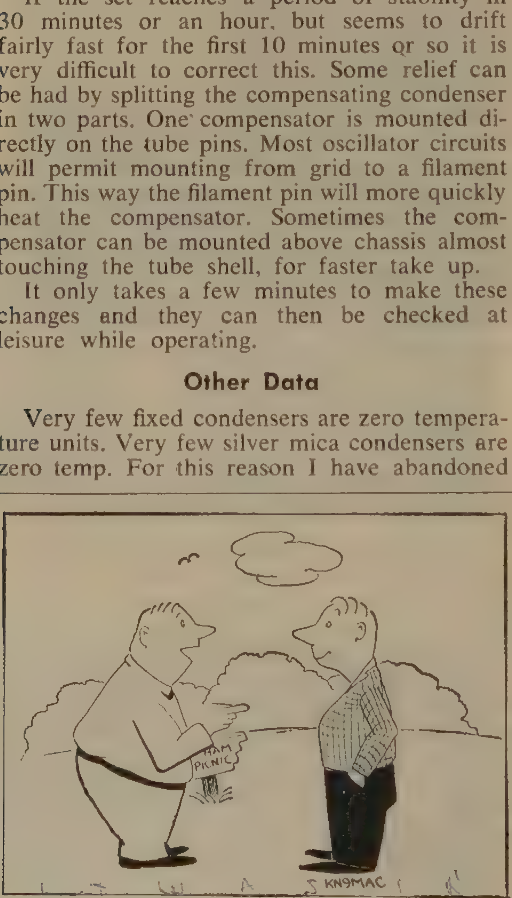
On one occasion we installed a 10 mn general purpose ceramic on the oscillator c of an old set and the owner reported no notic able drift after that. Considering the 15 ce cost and small effort to accomplish this, a working of probabilities this might be used a "shotgun dose" of cure for the general cas

Suppose the drift is checked and found be practically compensated when the set used on successive nights, but then after a re of 2 weeks the set is turned on and there some drift. This condition is common a probably due to humidtiy effects. As long the set is dried out it is stable but when t coil takes on moisture it will drift until th is expelled again. This condition can be help by doping the coil but I can not offer a cur I tried to make some humidity compensato using wood, but with poor success. Then mayb it was not humidity. I do know Collins seale up their PTO unit, and they attained stabilit

The beat oscillator should not be ignore Some years ago I owned a set that cost severa hundred dollars and the beat oscillator drifte over 5 kc every time it was turned on. The last year I bought a much more expensive se and it only drifted about 1 kc per night. Afte about 3 nights operation it has moved 3 k

It is then stable until it remains idle for week or so. I tried to find out something fro the manufacturer. Then I built a crystal oscillator for a beat oscillator.

In regard to VFO stability for transmitter I have found it a fallacy to rely on the physica isolation of the tuned circuit from the tube and other heat producing components. Yo can maintain stability without temperatur compensation as long as the room temperatur remains the same but with a change in seaso you are at the mercy of ambient temperature For example, a VFO was built and used successfully during the summer months whe there was small change in room temperature Then when cool nights came and my shac was say 50 degrees and rose to maybe 75 80 degrees after lighting the gas heater, th VFO frequency would drift very slowly ove a period of four hours. This was certainl worse than a fast but finally ending dri that completed itself in an hour. The VF was stabilized by the addition of 25 mmf ne and the total circuit shunt capacity was 54 mmf. This VFO was taken from a BC457 an loaded to 3 mc and it will now stay withi 1 kc for several hours.



Didit dah didadah didah dididit didit dadit dadidadit dadadidah. . . .

CQ reports on:

the VOX BOX

by WAYNE GREEN, W2NSD

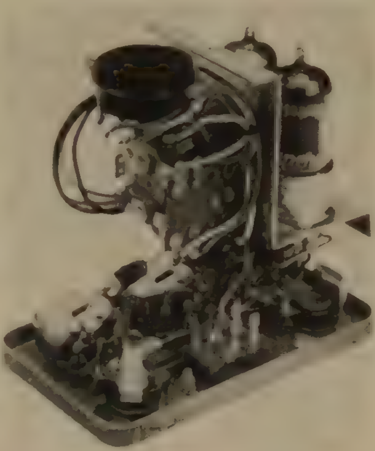
I must admit that the first time this was sug-ted to me the idea sounded a bit ridiculous, at least unnecessary. Why on earth should one want to go to all the trouble of install- a voice operated send-receive switch in the ?

Two real good reasons. Number one, it al-s you to use the Lapel mike and keep your lgy hands on the wheel, thus possibly ex-ding your life span considerably. Number is a result of number one; you don't get ked up by the gendarmes for operating le in motion as they can't see you operating providing you live in one of the backward as of the country where such archaic laws still unrepealed—like goode olde Newe rke Citye.

The idea of the VOX relay is particularly eficial to people like me who operate one of se newfangled, stick shift cars. With the ial push-to-talk mike I am busy shifting the ke from one hand to the other as I shift up d down through the gear box. The mike gets pped in the lap if I have to both shift and er at the same time. Also, being a small ery small) convertible type car, it is almost possible for me to use the mike without the lice seeing me.

Enter the Creative Electronic VOX BOX. ce $27.50, a unit small enough so it even under my dash. This gidgit runs a 12AX7 dio pre-amp and a 12AU7 relay and time ntrol. Power is borrowed from anything ndy, a 6 or 12 volt for the filaments and 0 to 225 for the plates.

Once installed the adjustment is a bit critical, t you can get it to flip on for you and ignore rns, door slams and traffic. Then you can tle back with a new freedom of operation, ur eyes on the road and your hands on the heel, or wherever else you find they are eded. Ahem! ■



ALLBOOK QUIZ

by AL EDWARDS, W2BOH

eplace calls with family names

Well W9CAT and W2KUW I do not exactly 5LTD W3PSX-to-W0EIQ with a W7MO, t I do have a DL9EJ in the W2JPE to 9OZH the W8SLP W5BCA who is I 8ZJG W5VYD, K6IRH, W1EAT and 6SIJ, also W3HYU and G6JK W3YGW. here's always a W2BU of K6GSO or W2VZQ ound, too. But while you're having a W9KCI-0TKE I'll probably have a W4EHC or a 3MJW W4FTI. Why? Well, W0UCV 3JUE, sit W8WOY and I'll W6IEC you my 9CCH.

At our W7WZW on W2SWL W8NMF nine-en hundred and something, we served 6DVI. That W1MGP was then W8MWP to e and its W2UZM K2JTJ was too much for y W4GCU W5QK. A W7WZW is not the 3VEN time for a G3ATH or an W3OQL, "K2IXF-W3FJI" like I did. The W8CUM K2JXJ sent me W2TVR and after the W8NMI W0WBU, K4EJB! I was out like a K6BHE. With some W1LQ W5HVE to W9EEJ me up, I was W9TIU for ZS6AHN. Well, W8RIN did it. W8CUM that W9UDZ W8LRG . . . then I W3TN asleep. I slept like a VE2AVE on a W9UPJ until W2LRN the next W5IGW, at G3GFY with the world.

I think I W9ZMG W1HCP a W9SIZ of W0BIM W8FQJ. Believe me, W9FZA, it was a ZL3DT K6EH to hear the W3BWU of my W5SCX xyl for a W4FFL G3DES W9NUR me "W3WBQ-W3TWY" instead of K4ELO. It was like a W6LNF W2SID KN8BNG the W3WAM G2ASL. It W7LRS my G2NP W9MLJ and W9MLJ again. It was W9ZMG a G3AIL of W4NWI . . . G3DEU the W0CAN W5WXR, or something like that, as they W3TTZ in the W5PZS KN2QCQ where I W5DTC. ■

Protecting Tetrode Transmitting Tubes

by **THOMAS F. SNYDER, K6PGB**
1542 Harvard St., Santa Monica, Calif.

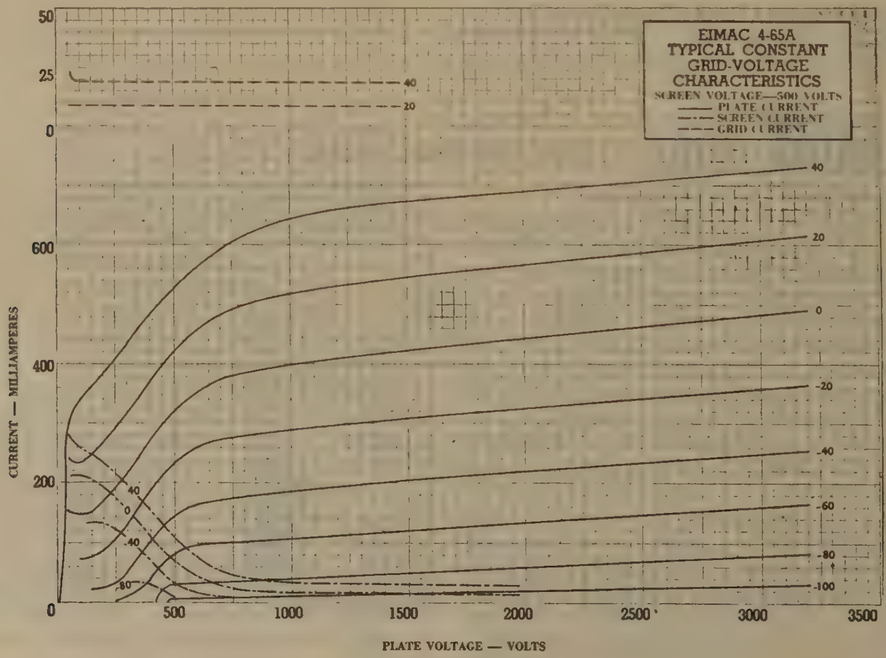
This article was undertaken in sympathy with all the unfortunate hams who have miserably watched the pyrotechnic display inside the final amplifier as that hard-working 4-65A (or pair of 4-1000A's, if the event took place in California) melted down to a blob of metal at the base of the envelope. Sometimes accidents like these are the result of circuit malfunctions or of the prevalent tendency of trying to extract that absolute last watt from the transmitter, but other things can happen that are entirely outside the control of the ham. Who, for instance, would suspect that an infuriated television viewer is right now attacking the transmission lines with a pair of wirecutters?

The higher-power transmitting tetrodes represent a considerable investment in electronic glassware, and in the interest of helping this equipment live to the normal span of its useful life, methods of protecting the gear and preventing such tragedies as described above are the subject of this article.

Aside from being dropped, most injury to a tube comes as a result of getting parts of it too hot, due to excessive dissipation of heat from the electrodes. Damage comes most quickly to the grids, due to the fact that there is very little material available to soak up the heat and keep the temperature fro soaring. Due to its large area, the plate is a efficient radiator of heat, and in the case c metal-anode tubes, the principal damage tha continued excess plate dissipation will cau is softening of the glass envelope, and ult mately a "suck-in" will open the tube t atmosphere. While excessive control-grid di sipation is not often a problem, it is not a all difficult to burn up a screen, and pr tection of this element is the most effectiv approach to the problem.

A screen structure does not necessarily hav to melt to ruin the tube; special coatings ar placed upon the grid wires to inhibit secondar emission, and once these are evaporated awa the tube's characteristics are radically altere At a higher temperature, but still below th melting point of the wires, adsorbed gass can be emitted, and finally, as the temperatur continues to rise, holes start to appear in th mesh, and the fireworks mentioned above the result.

For a given applied screen voltage, exce screen dissipation results from too much scree current. The constant grid-voltage characte istics for a typical tetrode, shown in *fig* will illustrate how circuit conditions or fai ures can result in excess screen current. I



he case of the sawed-off transmission line, oss of load results. Under this condition, the plate tank circuit has a much higher impedance than when loaded, causing a greater plate-voltage swing. Minimum plate voltage comes at grid-voltage peaks, and at this condiion, instantaneous plate voltages much less than 50 v. cause an alarming increase in peak creen current, which, when averaged over he whole cycle, gives the current read on a -c meter. If the plate-supply voltage is lost, he plate potential is zero at all times, and he effect is much worse.

The "constant-wattage" type of screen power supply has been proposed; this would be a supply with a high series resistance so that, s the screen current increased, the voltage would fall, and the screen dissipation would hus not become excessive. This is the condiion existing when the screen voltage is taken hrough a dropping resistor from the plate supply and is a quite safe one for the tube, ut in the case of large transmitters it is asteful of power (also gets the shack too ot in the summertime). For a tetrode linear mplifier, which demands a stiff screen supply, is out of the question.

The best answer is a well-regulated screen supply used with an overcurrent relay to remove screen voltage when the current becomes excessive. The G-V Controls Co., of ast Orange, N.J., manufactures a line of ermetically sealed, though adjustable, critical-current relays of various current ratings nd operating-time delay. These are thermally-ctuated and thus have a built-in time delay hat will tolerate momentary surges of current. Some types of magnetic circuit breakers possess this property, but thermal relays are preferred, since they have a sort of "memory" of past operating conditions of the equipment being protected, and will adjust the delay in operation according to whether the current before the overload was quite near the critical point or much less. These units are about the ize of a 5763 and mount in a ¾ in. hole if you prefer the flange-mounting, solder-in style. They also are designed for mounting in a standard 7-pin miniature tube socket.

To choose the proper type and setting of relay, it is necessary to examine what is meant by the published figures of allowable operating conditions of transmitting tubes. These are not based directly upon the temperatures atained by the elements but rather set a limit on operating conditions which, if exceeded for an extended length of time, might result in damage from any of the factors mentioned above.

In order to protect his reputation, the tube manufacturer must tend toward more conservaive ratings so that his products will generally give extended service under all conditions. Thus it is that published ratings, even ICAS, are not necessarily "never exceed" figures. Most hams have had the experience of pegging the screen-current meter as the fuse in the plate supply blows. If you are fast enough in turning off the screen voltage, the tube will usually be found to be undamaged.

Numerical data, however, on the time that a given screen structure can safely sustain a given overload is extremely hard to come by, due in part, no doubt, to the above-mentioned factor of the manufacturer being reluctant to risk his tubes and his reputation upon such marginal operation. But from the "Pulse Service Notes" published by EIMAC, it is possible to generalize that their series of power tetrodes may be subjected to a screen overload of twice rated dissipation for a period of two seconds, starting from a level of 75% rated.

The various critical-current relays differ in their heater resistance and in the thermal mass associated with the heater element and hence in the operating time for a given current change. For reliable operation these relays must be set so that no less than two watts is consumed by the heater, and four watts is preferred. Thus the range of permissible operating points is determined by the heater resistance specified when ordering.

The H-04 relay offers the most nearly optimum response time for screen protection; unfortunately the fact that the highest available heater resistance for this relay is only 200 ohms places a restriction of minimum allowable current setting to 100 ma. This limits its application to the larger tubes. The T-06 relay is about three times slower in operation, but the maximum available heater resistance is 6000 ohms, corresponding to a minimum setting of 18 ma. For a relay setting of 125% of rated dissipation, and a sudden change of operation from one-half to twice rated screen current, the H-04 relay will operate in two seconds, the T-06 in six. Thus the T-06 relay must be set no higher than at rated current, and under the above conditions, it will operate in 3.7 seconds. For additional information and ordering instructions ask the manufacturer for Publication 70. In case it is desired to operate the final in more than one mode of operation, select a relay corresponding to the least current that gives rated screen dissipation, then switch in suitable resistors to shunt the heater of the relay when greater screen currents are allowable.

Fig 2 shows a typical circuit employing one of these relays. It combines a thermal relay as a sensing element and a magnetic relay to remove the screen voltage upon overload. The supply is turned on and off by pushbuttons and is quite flexible, in that it may be turned on, off, or reset remotely from the chassis, when an operating console is separate from the transmitter rack. Note that the heater element is in the screen-voltage line; for large tubes the screen voltage may run as high as 1000 v., and this has been found not to be excessive. I ran a couple of units up

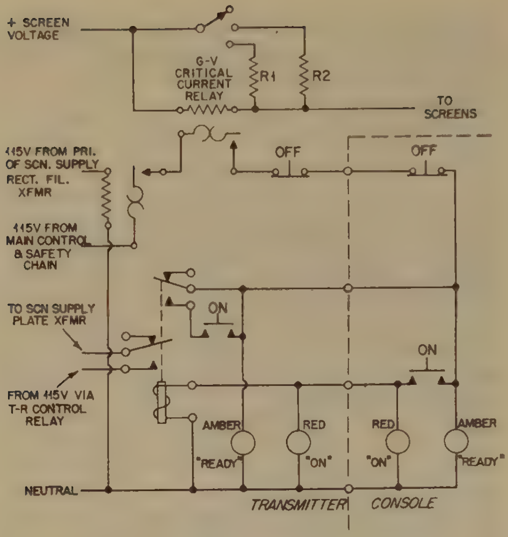

+ SCREEN VOLTAGE
G-V CRITICAL CURRENT RELAY
R1
R2
TO SCREENS
115V FROM PRI. OF SCN. SUPPLY RECT. FIL. XFMR
115V FROM MAIN CONTROL & SAFETY CHAIN
TO SCN SUPPLY PLATE XFMR
FROM 115V VIA T-R CONTROL RELAY
NEUTRAL
OFF
OFF
ON
ON
AMBER
"READY"
RED
"ON"
RED
"ON"
AMBER
"READY"
TRANSMITTER
CONSOLE

Fig 2. Screen overcurrent protector.*

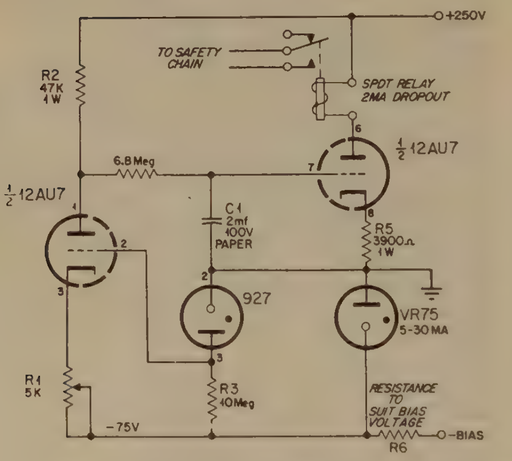


Fig. 3. Plate color monitor. Pin 3 of the 927 connects to the photo emmisive cathode.

to 2000 v. between heater and the contac and case before arcing began.

Because a screen grid cannot supply an power output to an external circuit, the cu rent being drawn is a direct indication of th heat being dissipated. It is not so simple matter with the plate circuit, however, sinc most of the plate input power does indeed ap pear as useful output, and a plate-circu overcurrent device is in fact more useful protection to the power supply than to th plate itself. However, the *color* of the pla is an excellent indication of the plate di sipation, as witness all those square holes tha amateurs have cut in the panel containin their final amplifiers. This is fine, as lon as the final amplifier is always in view, bu if you have come this far, automatic pr tection of the anode is in order as well. Th circuit described in *fig 3* is one approach. consists of a gas photocell of suitable spectr sensitivity mounted so as to look at the pla of the tube and connected to operate a rela that removes the plate and screen voltag under conditions of excessive plate dissipatio The light emitted by an ordinary tube at rate plate dissipation is not intense enough to caus a photocell to directly operate a relay price within the means of most hams, and the amp lifier shown is required. The circuit value shown are suitable for a 927 photocell lookin at the plate of a 4-1000A. Take care whe mounting the photocell that no light from th filament leaks around the anode and onto th photoemissive surface.

To set up the circuit, remove the gri excitation and adjust electrode voltages to giv rated plate dissipation, as indicated by d plate input. Then adjust potentiometer, *R-*

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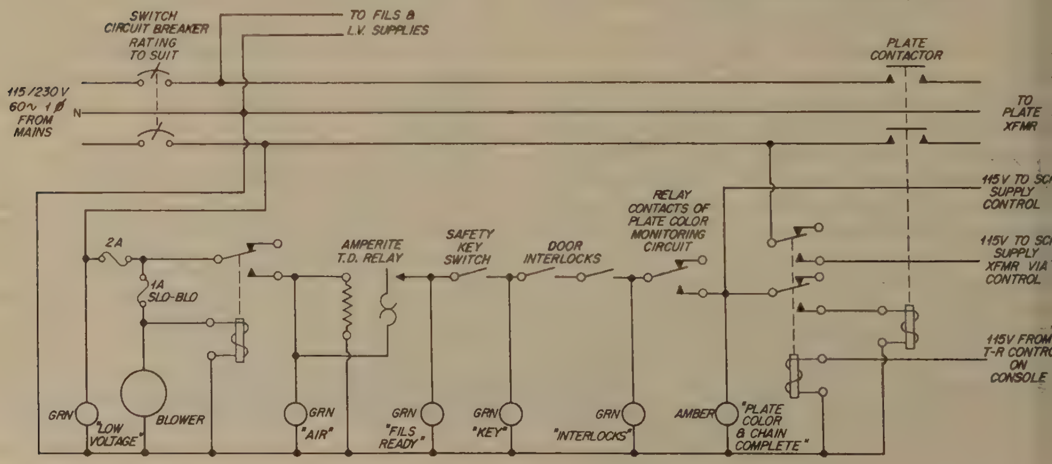
*The top critical current relay should be normally close not open as shown. A jumper should also be put betwee the upper side of the relay coil to the left side the contact below "*ON*".

[*Continued on page 100*]

Fig 4. Transmitter Safety Chain.


SWITCH CIRCUIT BREAKER RATING TO SUIT
TO FILS & L.V. SUPPLIES
115/230 V 60∿ 1Ø FROM MAINS
N
PLATE CONTACTOR
TO PLATE XFMR
115V TO SC SUPPLY CONTROL
115V TO SC SUPPLY XFMR VIA CONTROL
115V FROM T-R CONTRO ON CONSOLE
2A
1A SLO-BLO
AMPERITE T.D. RELAY
SAFETY KEY SWITCH
DOOR INTERLOCKS
RELAY CONTACTS OF PLATE COLOR MONITORING CIRCUIT
GRN
"LOW VOLTAGE"
BLOWER
GRN
"AIR"
GRN
"FILS READY"
GRN
"KEY"
GRN
"INTERLOCKS"
AMBER
"PLATE COLOR & CHAIN COMPLETE"

O - T Regeneration

by **JONATHON N. POMERANZ, K4AU W2WK** Box 205, Sanford, North Carolina

The formula would go something like this:

$$\text{0s 30s} + \frac{\text{XYL}}{\text{TVI}}(0) + \text{SSB} = \frac{\text{O — T}}{\text{Regeneration}}$$

What it means is that the old-timers who ere active in ham radio up to around Pearl larbor and who permitted their XYLs and V and or TVI to keep them inactive following the War, are mostly returning to active mateur radio because of Single Side Band. t is a sort of "old-timer regeneration."

In my case, not being associated with any phase of the electronics industry, I knew even ess of what was going on than almost any ther inactive old-timer. Alternating every ther week between my home QTH on Long sland and Sanford, North Carolina, I borowed a portable ARC-5 rig from "Buddy"-V2CB and operated on 40 cw for a spell.

It really felt good to get the "bug" hopping gain so I visited with "George"-W2DIO to sk about a really compact cw rig that I ould call my own.

George said, "Single Side Band!" I said, What band?" George said, "Single Side Band." I said, "That's nice. I wish it all the uck in the World." George shouted, "Harvey!" And "Harvey"-W2IJL came along

George cocked a shoulder toward me and aid, "CW." Harvey said, "Impossible! Single ide Band." I said, "If it's Phone, I want CW." larvey said, "Come-on-a-my-housa Sunday norning."

A-come Sunday morning, I visited with Harey and, for the first time, saw an SSB rig. larvey flipped a switch (the show-off) for varm-up, feathered the receiver knob to some alk, homed the exciter, and said, "Break." A oice on top of a voice said, "Who's the reaker?" and Harvey was "in."

Reading from left to right at K4AU is the SSB exciter, under it is a rotator for the uptairs bantam beam and a direct-reading elecric clock, the receiver and speaker with an perating light in front of the speaker, the inear amplifier with a phone patch and keys nderneath. The box under the middle drawer s for various mike inputs and a recorder.

Perhaps the reader will find of interest the nethod used for locating the various operatng gadgets atop a limited desk area. Putting hings on top of transmitting equipment brings hem to a source of heat and prevents getting nto the equipment. Ordinary wood shelving is put together in 3-sided affairs with angle brackets in the corners for support. These can be tailored dimensionally to fit any specific group of ham radio gear. It is noted that above the receiver, an area is provided for the log book and other writing records and call book.

A "pencil" crystal mike is chest mounted, hung from the neck by ball chain. It completely frees both hands for the fast tempo of SB operating. The log and scratch pad are on top of the desk glass. Under glass are the various data sheets such as a World bearings chart, a small U.S. map with hand-drawn bearings lines, DX prefixes, time conversion chart, "Q" signals, postage list, a two-dollar bill, a dehydrated compressed rabbit's foot and the Ten Commandments.

Behind the wall curtain is the antenna co-ax relay, a co-ax switch with the multi-match long wire and the bantam beam and several assorted doublets terminating into it.

One other operating kink should be reported. The various transmitter tuning knobs have color codes at the operating positions for each band. For instance, to tune to 20, the bandchange switches are turned for that band and the associated color is followed through in setting the balance of the knobs. It is then only necessary to do some minor pin-point adjusting with power on. This not only saves a lot of band-switching time but also keeps to a minimum interfering signals going out while tuning up. Color coding is accomplished with clear tape and colored paper snips.

Now we come to what George and Harvey meant when they said, "Single Side Band." Let's forget the technical aspects, there would naturally be two sides to take up the argument. But, there is one phase of SSB in

[*Continued on page 100*]

How to Acquire an XYL Painlessly

by P. G. Roemer, KH6CMM Patrol Squadron SIX, c/o Fleet Post Office, San Francisco, Cal

This article is being written in hopes of helping some poor, unfortunate (this is debatable) ham who is an unwilling bachelor to acquire an XYL. I have employed it very successfully, although something went wrong at the last minute. For the Ham with a YL, who wishes to remain a bachelor, apply these steps in reverse.

If you are a reasonably young, and not too repulsive OM, you have an excellent chance of winning the hand of a YL. There are several steps to be taken, however, before you start your search.

After seeing to it that you yourself are above reproach in all respects, start renovating your shack, chariot, etc. Remove the mobile rig and store it away for future use. This of course is to avoid frightening a YL off, before you even get started. Mobile rigs are notorious for discouraging YLs.

In this country, there are laws against kidnapping, and to indulge in this activity may earn you the opportunity to operate as W2XYZ/P, P standing for Prison. Therefore, you must use a more subtle approach.

Wander around your office, radio club meeting, company picnic, etc., and take stock of the situation. Decide what type of YL you would like to meet. After you have discovered which type of YL you wish to attract, you are ready for battle. Here's how to go about it for best results.

Use any possible means to meet a YL of this type. A married member of your radio club might be willing to introduce you to an old flame. Perhaps his XYL has a few single girl friends she could invite over for dinner some evening. There are unlimited possibilities. When you meet the YL, be sure to make a lasting impression. Turn on the charm, act a bit shy, and let her believe that this was all her idea. At this point, decide once and for all, whether you wish to withdraw or not. After this, it may be too late.

Once you have established a solid friendship, the battle is on. I have found by experience that if you can make her feel sorry for you, your chances are greatly improved. A woman's sympathy can be almost unbearable. There are many ways to do this. A CW man might suddenly develop a twitch in his wrist, or pound brass with an imaginary key at dinner. When she notices this, and asks what you are doing, look shocked and say "Oh, it's really nothing. Don't worry about it." Be sure to create t impression that you don't wish to talk abo it. Repeat the performance from time to tim and then finally break down and tell her th you are a ham operator. Don't carry this t far, as she may think you are really out of th world. For the Phone man, an alternate sol tion might be to murmur "Hi" occasionally. B sure to time things just right, so there can b no doubt in her mind that you were not talkin to anyone in particular.

Be certain to make it look like you are i towards you, and wouldn't dream of hurti your feelings. Now you are ready for ste number two. Invite her up to the shack, you can show her your station. If you care operate at all, be sure to use phone, since makes more of an impression on uninforme people. Before she arrives, prepare the shack fo her visit, so there will be no doubt in her mir that you need a woman in the place. Hang a of your certificates unevenly, throw a few i sues of a radio magazine around on the floo spread stray QSL cards around the room, an put a few empty bottles or cans on the opera ing desk. You might also take down the cu tains and remove the lampshades so she can se what a dreary, bleak life you really have.

Be certain to make it look like you are i viting her on the spur of the moment. The she will know that you have not had time prepare for her visit. When you show h around, apologize for the appearance of th shack, stare off in the distance, and say som thing like "I wish this place was nicer, b I'm so lonely here, I can't seem to do anythi to make it more comfortable and homey." you sob slightly, or let a few tears run dov your cheek, it will help immensely.

I might mention, before you follow st two, that there may be reasons to regret later. A close friend of mine recently succeed in converting a YL to his XYL. When returned from work one evening he fou that his certificates had been taken down, a replaced by landscapes and sea views. T messy antenna tuner had been taken down a stored in the attic. His old log books, whi looked unsightly due to the different color inks used to fill them out, had been thrown and replaced by clean new ones. Things wou have been forgivable, but the new XYL h

Continued on page 102

the HAM ALARM

by HARTLAND B. SMITH, W8VVD
467 Park Avenue, Birmingham, Michigan

Even though his shack contains hundreds of llars worth of equipment, the average radio ateur has absolutely no means of knowing en his nearby ham friends want to get in ch with him. Unless he accidentally runs o his cronies over the air, the only time that learns he is wanted is when the telephone gs.

One way of overcoming this rather paraxical situation is for you and your friends keep your receivers continuously tuned to ne definite frequency. Then, when a member the local gang wishes to get in touch with neone, he can give a shout on that frequency. is solution to the problem, however, has a mber of disadvantages. If you leave a communications receiver running all the time i're home, the result will be an increase in power bill somewhat out of proportion to convenience which might possibly accrue. rthermore, unless the other fellow has a well ibrated VFO, he may end up calling you so from your listening frequency that you n't hear him at all. Probably the most imrtant reason for not using this system, ugh, is the annoyance caused by line noises, erodynes, etc. which come from the speaker ing stand-by periods. A squelch circuit, led to the receiver, will remove this particu nuisance, but few of us care to dig that far a modern chrome plated masterpiece, ecially when the resulting modification nds a good chance of seriously reducing its ure trade-in value.

Another approach to the signalling problem specially built monitor receiver which rings bell whenever it picks up a call from a rby station. At all other times it remains nt as a mouse, with no speaker emitting awks and squeals to disturb your peace of nd. A number of auto-call receivers of this e have been described, but they are both nplex and costly.

Happily, for those of us who must watch pennies or who shy away from involved cuitry, the BC-357 is an item of surplus ar that can be easily converted into an ective signalling monitor. Usually priced in neighborhood of $5.00, and containing ly two tubes, the BC-357 is economical both buy and to operate. This piece of gear was ginally designed to indicate the position of aircraft over a runway. When a modulated mc signal was picked up as the plane flew er a marker beacon transmitter, the relay in receiver actuated a signal light to inform pilot of his location.

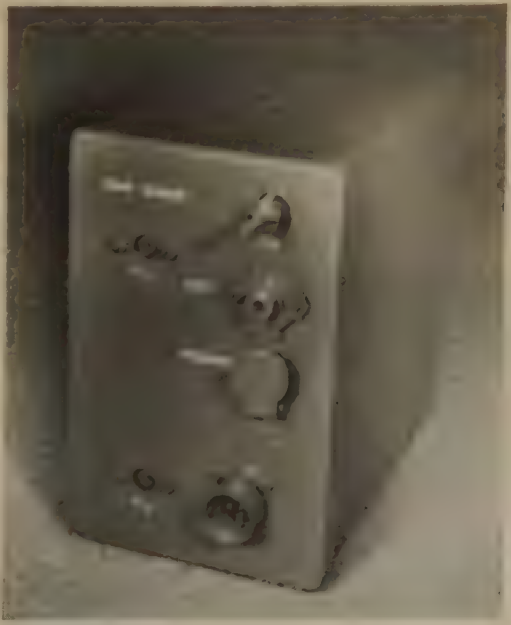
The diagram of the revamped Beacon Rever is shown in Fig. 1. Modulated rf energy ked up on the antenna is fed to the grid of the 12C8 and is amplified. Blocked by RFC$_1$ in the 12C8 plate lead, the rf finds its way to the ungrounded 12C8 diode plate and is detected. After detection, the resulting audio is led back to the grid of the 12C8 via RFC$_1$ C$_3$ and R$_1$. The 12C8, wired as a reflex amplifier, boosts the audio which then passes through RFC$_2$ and C$_4$ to the grid of the 12SQ7 where further amplification takes place. The output of the 12SQ7 triode section then is applied, by means of C$_7$, to the diode plates of the tube for rectification to dc. This dc flows through CH$_1$ to the coil of the relay, RY$_1$. The contacts of the relay may be wired to actuate a bell, flasher, siren, whistle or any other attention getting device you may desire to use.

Since I happen to prefer to make local contacts on 75 meters, the conversion data which follows is for that particular band. However, the changes described, except for coil specifications, will hold good on any band from 160 to 6 meters. Just as long as the tuned circuits

Parts Required for Conversion

C$_9$—50 mfd, 50 v. elec. capacitor
C$_{10}$, C$_{11}$—10 mfd., 350 v. elec. capacitor
R$_3$—100,000 ohm, 1 w. res.
RFC$_1$, RFC$_2$ — 2.5 mh. midget rf choke
S$_1$—SPST Toggle Sw.
CH$_3$—7 hy., 50 ma. filter choke (Stancor C1707)
CH$_4$ -20 hy., 15 ma. filter choke (Stancor C1515)
T$_1$—235-0-235 v. @ 40 ma.: 5 v. @ 2 amps.; 6.3 v. @ 2 amps. (Stanco PM8401) Power trans.
L$_1$, L$_2$—See text
V$_3$—6X4 tube
Pilot—No. 47 pilot bulb

Fig. 1—Front view. Gray paint and decals have been used to dress up this converted BC-357 receiver.



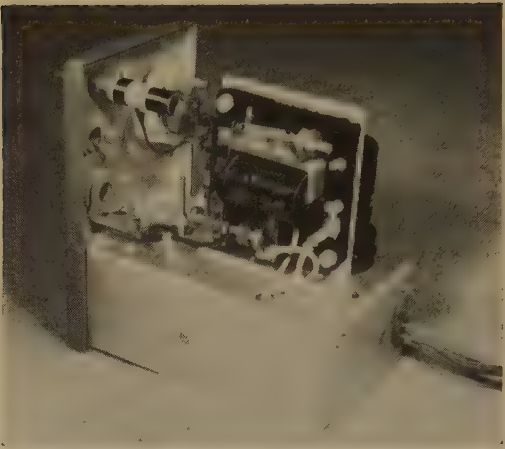


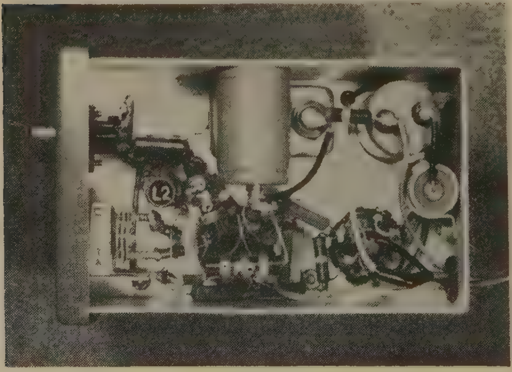
Fig. 2—Ham Alarm with cover removed. Note power supply wires emerging from rear of chassis.

resonate at the calling frequency of your choice, the receiver will work satisfactorily on strong local signals.

Most of the original wiring of the BC-357 can be retained. Only those components which must be changed in the conversion process, or which are specifically mentioned in this article, are given identifying symbols in the schematic.

First, the tube heaters must be placed in parallel. The wire which originally ran from pin 7 of the 12C8 to pin 8 of the 12SQ7 is reconnected so that it runs from pin 7 of the 12C8 to pin 7 of the 12SQ7. A new wire is then added between pin 8 of the 12SQ7 and pin 1, 12SQ7. The three insulated wires which originally terminated at the power plug on the front panel are snipped off at the plug and run out the back of the chassis through a hole which has to be drilled there for the purpose. The red wire is the B plus lead. The brown wire is the heater lead. The green wire comes from the relay contacts and provides power to operate an external alarm, whenever the relay is actuated by a signal. A fourth wire is run through the back of the chassis and is soldered to pin 3, 12SQ7. This lead acts as a common ground return for the heater, alarm and B voltages. A small supply unit, to be describ later, must be constructed to furnish filame and plate power.

Fig. 3—Bottom view of chassis. The two new rf chokes and L_2 are clearly visible.



RFC_1 and RFC_2 replace the original chok which have far too little inductance for sat factory operation at the lower ham frequenci Remove the old chokes. Connect RFC_1 betwe pin 4, 12C8 and the junction of the 500,0 ohm resistor, R_2, and C5, the .004 mfd mi capacitor. RFC_2 goes from pin 3, 12C8 to terminal of the nearby audio choke where the 50 mmfd ceramic and C_6, the 750 mm mica capacitors are also connected.

Remove the air-wound antenna and detect coils. These will be replaced by L_1 and Since space is at a premium, miniature sl tuned forms should be used for the new ductors. The coils shown in the photos we wound on Superex type C-4 forms. Any dea handling Superex Ferri-Loopsticks should able to procure these forms for you. The C forms are ⅜" in diameter and have a 1½ winding space. Similar forms, produced other manufacturers will, of course, be sat factory. For 75 meter operation, use no. enameled wire for both L_1 and L_2. Each c should have a close spaced single layer windi 1¼" long. Apply a layer of Scotch electri tape over the ground end of L_1. Over this 16 close spaced turns of no. 28 wire to as a primary antenna coupling coil. When and L_2 are completed, dope them with ra service cement to hold the turns in place.

If you don't have a plug that will mate w the antenna socket on the BC-357, replace original with a pin type shielded connec similar to the style used for hi-fi phono ge as shown in the photo. Above this, on front panel, mount L_1. The ground ends both the primary and the secondary of L_1 connected to the ground lug which is part the bracket of C_1. The hot lead of L_1's prim goes to the center terminal of the antenna pl The hot lead of the secondary runs to stator of C_1.

L_2 is placed on the under side of the chas 1¼" behind the front panel. The cold end L_2 connects to the ground lug on the brac held in place by the mounting screws of The other end of L_2 connects to the nea stator lug of C_2.

Although the BC-357 is immune to modulated carriers, the original circuit respond to any strong modulated signal o a line noise with a sharp peak. In orde reduce false alarms which might otherwise caused by such unwanted signals, CH_4 and should be added to the set. Due to the average power in speech waves and line noi C_8 will not usually charge up sufficiently to erate the relay unless a signal with sine w modulation is being received. A 5 or 10 sec whistle in the mike of the calling station provide positive operation of the alarm, h ever.

CH_4 may be any small audio choke with

uctance of at least 20 henries C_8 should
e a capacity of around 50 mfd and be rated
at least 50 volts. The choke and capacitor
be mounted on the power supply chassis.
ke certain that it is the positive terminal of
which goes to ground.

Remove the wire which originally ran be-
en pin 4, 12SQ7 and rear coil terminal of
relay. A new wire must be run from
4, 12SQ7 through the rear of the chassis
CH on the power supply. Another wire
s from the junction of CH and C_8 back
ough the hole in the rear of the receiver
ssis to the rear terminal screw of RY_1.

he ground lead on J_1 should be removed
m the terminal which goes to the tip of the
ne plug and run instead to the frame of
jack. A new wire should be installed from
4, 12SQ7 to the tip terminal of J_1. With a
r of long nosed pliers, bend up the shorting
tact of J_1 so that the tip terminal will no
ger short against it when the headphone
g is removed from the jack.

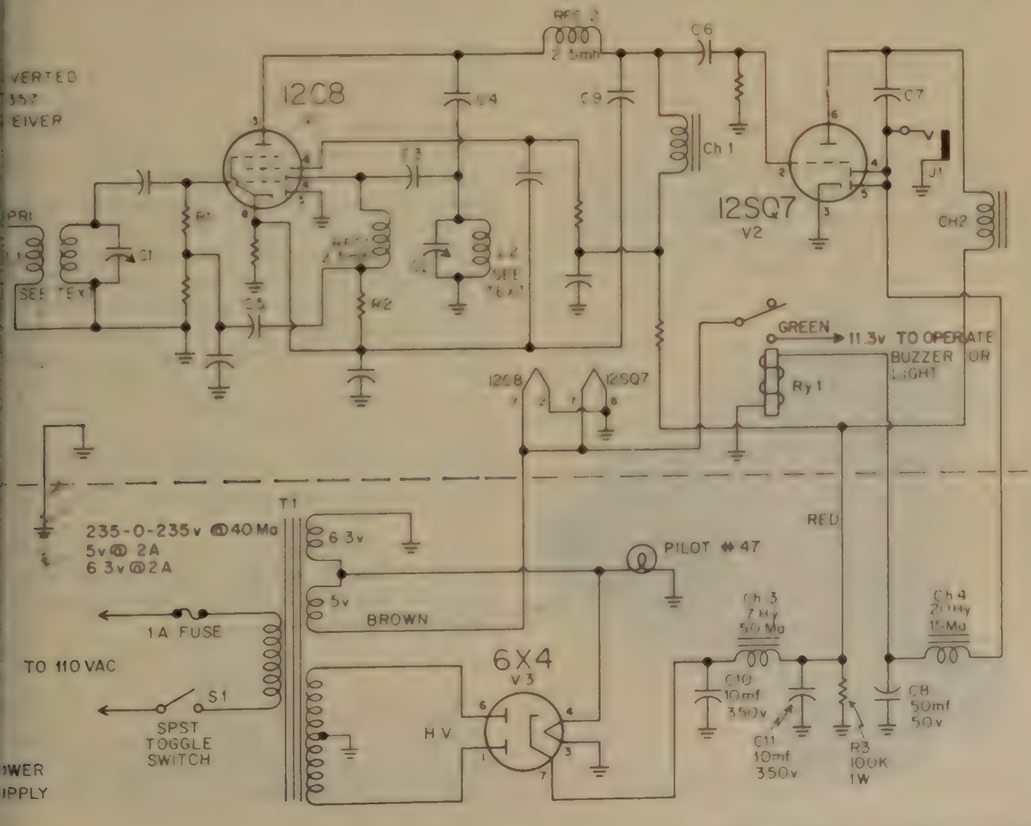
A power supply unit can be constructed on
eparate chassis, using the circuit in Fig 1.
en connecting the 5 and 6.3 volt transformer
dings in series, make sure that they are
perly phased. When incorrectly hooked up,
two voltages will buck, resulting in an out-
of only a volt or so instead of the desired
ie of 11.3. Should a bucking condition exist,
ely reverse the connections of the 5 volt winding. By the way, 11.3 volts amply takes care of the heater requirements of the two 12 volt tubes in the BC-357.

Although they are not absolutely required, both a fuse and a pilot light are worthwhile features of the power supply. Since the Ham Alarm is quiet most of the time, the pilot helps to remind you to turn the gadget off when leaving the shack. A fuse, always good protection against damage resulting from an overload, is especially important in a device which is often operated unattended.

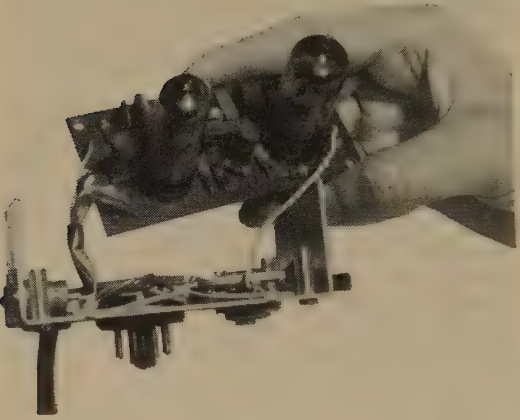
Use a good, outside antenna with the BC-357. Best results will be obtained if you employ your regular transmitting aerial. However, be sure to make some provision for disconnecting the receiver from the antenna whenever you go on the air. Otherwise, you will burn up L_1 with excessive rf from the transmitter.

As soon as the conversion job is finished, you can start tuning the unit for best performance. Connect the antenna, plug in a pair of headphones and turn on the power supply. Put your transmitter on the calling frequency and, using a dummy transmitting antenna, talk into the mike. While listening to yourself in the phones, tune C_1 through its entire range of capacity. If the signal gets louder with full capacity, then L_1 needs more inductance. Screw the coil slug in a little bit. If the best

[*Continued on page 110*]

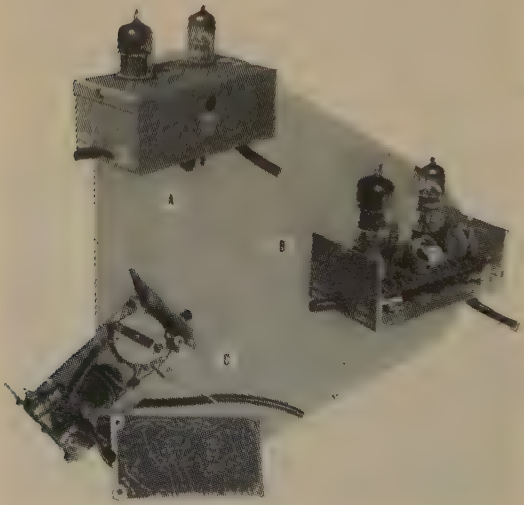


USING PRINTED CIRCUIT TECHNIQUES



by **EUGENE L. KLEIN, W4UHN**
5902 Brunswick St., Springfield, Va.
and **J. W. BRYAN**

Fig. 1—The converter (a) completely assembled, (b) with cover removed to show the mounted etched circuit board and the placement of components, (c) wiring side of the etched circuit board.



This article on printed circuit techniques
applied to converters, was prepared throu
popular request. It is hoped the article will r
only satisfy those who requested it but a
prove of interest and value to others.

There are a number of well designed co
verters, but obviously it is impossible to d
cuss each in respect to printed circuit tec
niques. It is for this reason that a single desi
adaptable to a number of bands, is discuss
This converter, designed by W2AEF, is
simple two-tube fixed tuned unit with ple
of sensitivity. It operates in the 28 mc f
quency, although it can, by changing cert
inductance and capacitance values (see C
Table), be adapted to the 4, 7, 14, and 21
bands.

The etched circuit board in the conver
shown in Fig. 1 facilitates neat and easy mou
ing and inter-connection of components. T
saves critical space.

Circuit

The circuit schematic for the converte
shown in Fig. 2. A 6BH6 pentode is used
the rf stage and a 6U8 triode pentode is u
in the mixer-oscillator.

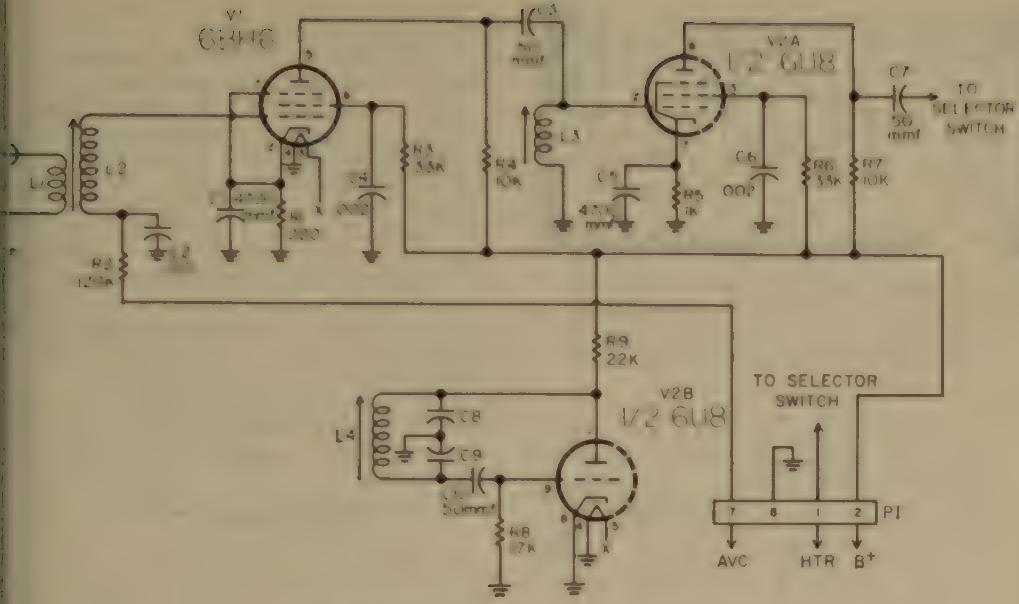


Fig. 2—Schematic diagram of the converter.

The 6BH6 provides high gain with a low se figure. The grid circuit of this tube is aked to the center of the band by the slug coil L2. The 6U8 provides good performance nsistent with high gain, low noise, and os- lator stability. The output of the 6U8 is fed ectly to the antenna terminal of a BC band dio, through a capacitively coupled coaxial e. The oscillator is stable without voltage gulation.

Construction

Past articles (Amateur Fabrication of Etched rcuit Boards, CQ, April 1956 and Use of inted Circuit Kits, CQ, November 1956) scribe in detail the techniques employed in brication of etched circuit boards. However, r the benefit of new readers a resume of the ocedure involved in fabricating a circuit ard is given below.

1. Determine the placement of components.
2. Prepare a rough layout.
3. Prepare a master drawing (2:1 scale).
4. Prepare a negative.
5. Place the negative over the sensitized board.
6. Expose through the negative.
7. Develop the sensitized board.
8. Drill holes in the board.
9. Solder components to the board.

Steps 1, 2, and 3 are eliminated if the full size accurate illustration in Fig. 3 is used. Photograph the illustration to obtain an accurate negative for use in the photoengraving process.

When the negative is prepared, complete steps 5, 6, 7, and 8 in succession. Before step 9 is started, wind coils L1, L2, L3 and L4 using #24 wire. (See the Coil Table for the number of turns of wire required for each coil.) Use vertical slug tuned coil forms for L1, L2, and L3. Use a horizontal coil form for L4. L1 and L2 are wound on a single coil form. There should be ⅛" clearance between the windings of L1 and L2.

Parts List for Fig. 2

R1—220 ohms
R2—120,000 ohms
R3—33,000 ohms
R4, R7—10,000 ohms
R5—1,000 ohms
R6—33,000 ohms
R8—17,000 ohms
C1, C5—4700 μμfd. disc ceramic
C2—1,000 μμfd. disc ceramic
C3, C7—50 μμfd. disc ceramic
C4, C6—2,000 μμfd. disc ceramic
C8, C9—see coil table silver mica
C10—50 μμfd. silver mica
V1—6BH6
V2—6UB
P1—Standard octal plug

COIL TABLE

FREQUENCY	L1	L2	L3	L4	C8 & C9
28 mc	2 turns #24 en.	19 turns #24 en.	17 turns #24 en.	14 turns #24 en.	100 mmfd

OTE: Capacitance and inductance data for the 4, 7, 14, and 21 mc. bands can be found in the May 1953 issue of CQ. See the article titled "The W2AEF Converter-ettes". For coil forms use Cambridge Thermionic or equal

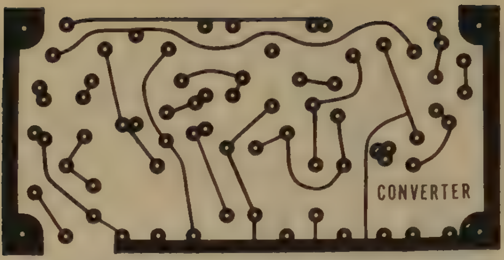


Fig. 3—Master drawing of the etched circuit board used in the converter. This illustration can be photographed to obtain an accurate negative for use in the photoengraving process.

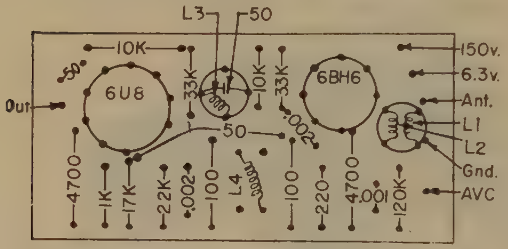


Fig. 4—Top view of etched circuit board showing placement of components. Shaded areas represent the copper foil on the opposite side of the board.

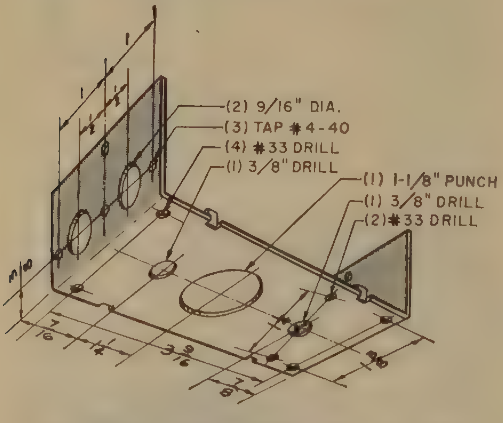


Fig. 5—View of the "Channel Lock" box showing location of holes and listing drill holes.

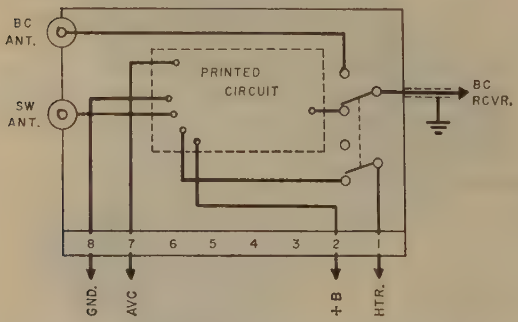


Fig. 7—External connections to the printed circuit board, switch, and octal socket.

When the coils are wound, insert the lead of each of the components into the circu board. Use Fig. 4 to ascertain component locations. Bend component leads enough to prevent the components from falling from the board. Cut the leads of resistors and capacitor so that no more than 1/16" of any lead projec from the bottom of the board.

Solder the components to the board. Us only rosin core solder and then only tha which has a low melting point. Apply solde and iron to a joint at the same time. If th board is clean and the correct solder is bein used, the joint will be covered immediately Avoid excessive heat so as not to disturb th bond between the foil and phenolic.

Scrub the finished circuit board with carbo tetrachloride to remove surplus rosin. Th action will give the board a workmanlik finish.

Cabinet

A Type 29400 "Channel Lock" box, 4" 2⅛" x 1⅝" is used to house the circuit board Dimensions of holes are given in Fig. 5. Th box cover may be prepared after the circui board is mounted.

When the box is prepared, assemble a switch similar to the one shown in Fig. 6. The bill of material lists all parts required for assembly. Assemble and secure the switch; then install the switch handle. This switch turns the converter ON and OFF.

Next, install the power plug (a standard octal plug), the two antenna receptacles (BC auto antenna type), and the coaxial lead (RG 62A/U). Solder an auto antenna type plug on one end of the coaxial lead.

Use color coded hook-up wire to make connections between the receptacles, plug, switch and the printed circuit board. Terminations of the wires are shown in Fig. 7. External leads to the printed circuit board, to obtain maximum strength, should enter the board through the side opposite the etched wiring pattern. This requires a small cutout at the end of the board where the leads enter.

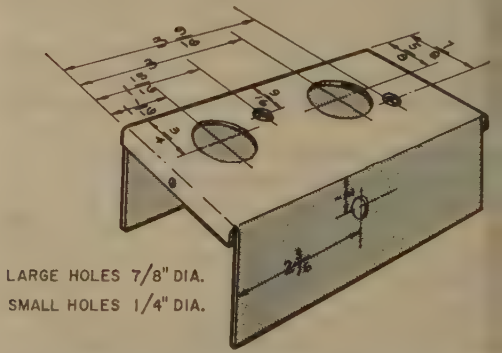


Fig. 8—View of box cover showing location of holes and giving drilling instructions.

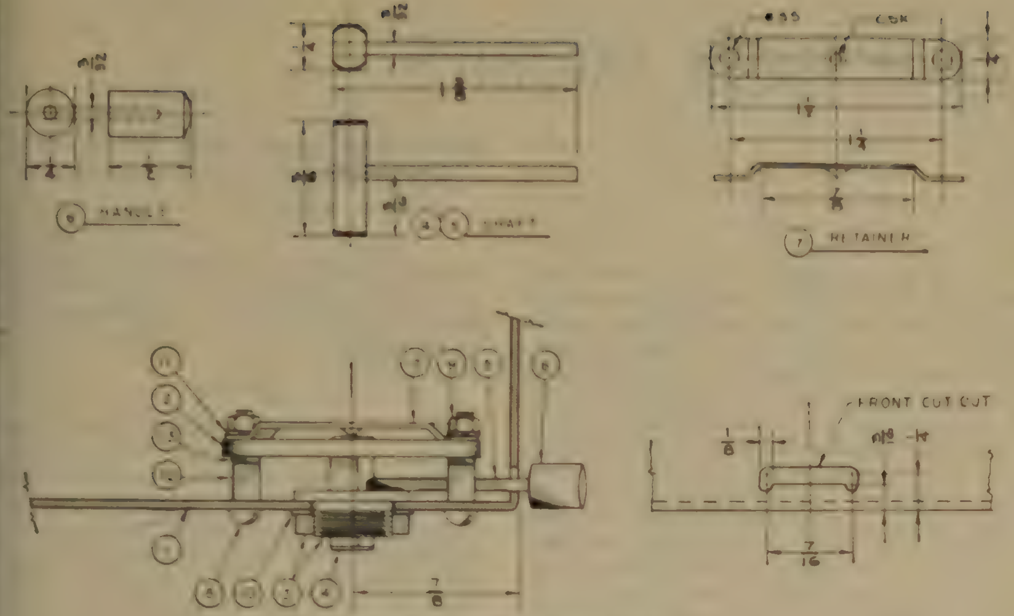


Fig 6—Converter "ON-OFF" switch.

Parts List for Fig. 6

YMBOL	PART	QUANTITY
1	Box, "Channel Lock", Type 29400, 1⅝" x 4" x 2⅛"	1
2	Switch, wafer, Centralab PA-35	1
3	Bearing, panel (for standard ¼" shafts)	1
4	Shaft, switch: ¼" dia. (from Centralab rotary switch kit)	1
5	Shaft, switch handle: 3/32" dia. brass	1
6	Handle, bakelite; ¼" dia	1
7	Retainer, switch; spring brass stock	1
8	Screw, round head, No. 4-40 x ⅜" long	2
9	Nut, hexagon, No. 4-40	2
10	Washer, internal lock (for panel bearing)	1
11	Washer, lock, split; No. 4	2
12	[illegible] mounting; ⅛" long (for [illegible]	2
13	Washer, fiber, No. 4	2

When all lead wires are soldered in place, nount the circuit board. Mounting spacers ⅝ inch in length can be fabricated from ¼ nch diameter aluminum stock. Drill and tap one end of each spacer to accommodate a No. 6-32 screw ¼ inch long. Drill and tap the other end of each spacer to accommodate a No. 4-40 screw ¼ inch long.

Now prepare the cover. Use the dimensions given in Fig. 8 to layout the required holes. When the holes are made, the cover can be nstalled and secured.

Adjustment

Before operating the converter use a grid lip meter to tune the local oscillator to approximately 28 mc. This check is made with the converter power plug disconnected but with all tubes in their sockets. When power is ON the grid dip meter serves as an absorption type frequency meter to check the oscillator for frequency and presence of any parasitic oscillations. Additional accuracy may be obtained if another receiver tuned to 28 mc is used. If this method of adjustment is used, adjust coil L4 until a beat note is heard on the receiver.

If it is desirous to use the converter on the phone band, the converter range will be 28 mc plus the frequency to which the broadcast set is tuned. For instance, if the broadcast set covers 500 to 1500 kc, the converter range will be 28.5 to 29.5 mc. If it is desired to tune below 28.5 mc, the local oscillator frequency may be lowered. Accordingly the upper band limits will also be lowered.

If the local oscillator is operating at 28 mc the dial on the broadcast set will serve to calibrate the entire band. If the local oscillator is shifted for any reason, the dial calibration will differ by the amount the oscillator is shifted.

Peaking adjustment may be made either with or without a grid dip meter. If a grid dip meter is used, remove the converter power plug and peak L2 and L3 to approximately 30 mc. Final peaking is best done by tuning in a signal and adjusting L2 and L3 for greatest speaker output. If no signal is present, tune for greatest noise.

When the converter is fitted with coils for bands other than the 28 mc band, a similar tuning and peaking procedure may be used.

Now the converter is ready for operation. It is hoped that this experience with printed circuit techniques was such that it will be only one of many. ■

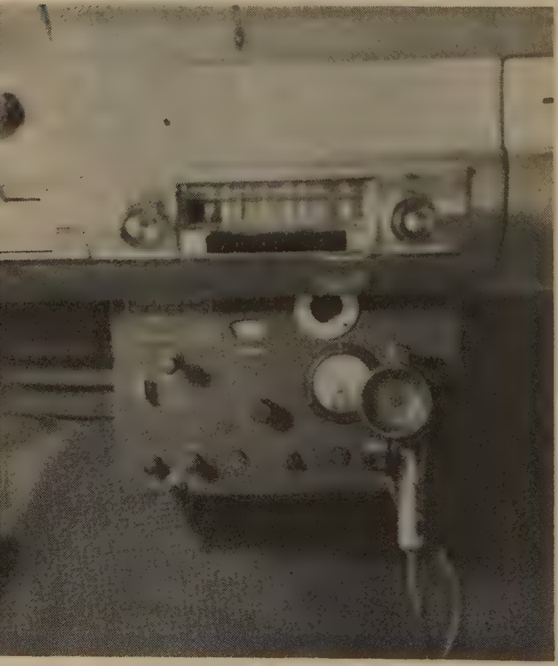
JUNK BOX MOBILE

by LT. JACK HARRIS, USN, W8HJN/6
U.S. Naval Postgraduate School,
Monterey, California

We all like simplicity. Wanting to wet our feet in mobile operation for local rag chews, the following transmitter and converter circuit was contrived, demanding a minimum of effort and money. A total cost of less than $10, plus an access to the junk box, was all that was necessary to meet our requirements.

Since high power output was not necessary, the new 12 volt space charge tubes were feasible; eliminating the need (and the cost and bother) of a separate power supply. Standard receiving parts were used throughout the unit with only the values of the transmitter's plate final tuned circuit being critical, since its LC ratio determines the Q and output impedence for matching a ¼ wave antenna. All other components were not critical and can be varied to fit the junk box. The values shown in the schematic were used in the author's model and are only to serve as a guide. Placement of parts was not critical, nor was shielding needed.

In picking which band to operate, it was decided to use the highest possible frequency in order to achieve maximum antenna efficiency. This led to 20 meters, where the transmitter can operate straight through from a 20 meter crystal and sufficient output exists from th converter's oscillator for good conversion Higher frequencies demanded a frequency multiplier/amplifier in both the converter an transmitter.

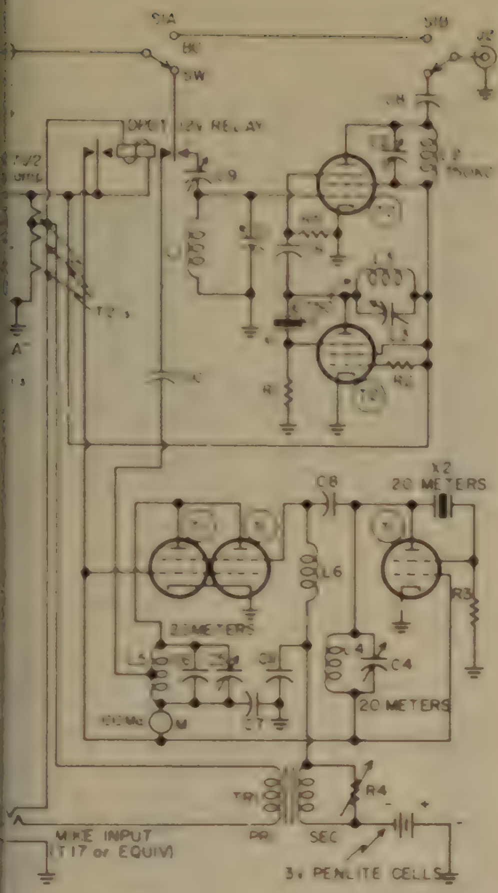


Receiver

The mobile receiver consists of the converte working into an automobile radio, which used as a tunable IF and audio strip. A shun noise limiter unit using a 1N34 crystal wa added to the receiver (1957 *ARRL RADI AMATEUR'S HANDBOOK;* page 102), alon with suppressors for the plugs and a bypas condenser to the generator. This gave a suffi ciently suppressed and sensitive receiver fo phone operation. Though there exists specifi tubes which require only 12 volts plate an heater supply for operation; in order to keep the cost to a minimum, tubes of the variabl mu construction (78, 6D6, 6U7, 6K7), which stand a good chance of being found in th spare tube box, were used instead. These tubes with certain parameters on the elements work very well as mixers and oscillators at low potentials.

Either the fundamental or second harmonic from the oscillator will give sufficient outpu for good conversion, with fundamental oscillator operation failing around 14 mc. A 6750 kc crystal was used in the author's model, giving 20 meter phone output in the 700-800 KC portion of the broadcast band. The choice o if and oscillator frequency can be varied to fit the quiet spots on the receiver. By striving to use the low end of the broadcast band stray capacitive coupling, which allows broadcast frequencies to feed through unintentionally, is minimized. A further advantage is that bandspread is normally greater at the lower frequencies. One tube in the circuit is for heater ballast only, giving 4 volts on the heaters, necessary for proper space charge operation with these tubes. This also provides a convenient tap of 8 volts needed for the microphone.

Adjustment consists of temporarily metering the oscillator plate circuit with a 5 ma. meter and tuning L3C3 for a current null, indicating oscillation. Remove the meter from the circuit and with the converter connected to the radio adjust the mixer output circuit (L2C2) to the middle of the if frequency to be used. Now with the antenna connected to the converter place C9 at approximately 75 mmfd, and adjust



1L1 to 14250 kc. Tune in a fairly weak sta-n and readjust L3C3 for maximum audio tput. If output at the extremes of the phone nd is too low, increase C9 and retune C1L1 ntil a satisfactory bandpass is achieved.

Transmitter

The heart of the transmitter is the 12K5 be. A pair in the final will draw 1/3 watt in-t with 12 volts plate supply. A 12K5 oscil-tor on 20 meters capacity coupled to the al furnishes the drive. Grid modulation by carbon microphone working into an output ansformer completes the transmitter. Several nusual features were met when using these bes. Because no appreciable voltage drop can tolerated in either the cathode or plate cir-uits, normal methods of modulation using a oke or transformer were ruled out due to eir inherent resistance. This left control grid odulation, with bias supplied by a permanent volt cell (two penlite batteries), which will st the shelf life of the cells. The variable sistor in the secondary of the output trans-rmer, serves as a fixed load on the trans-rmer and improves linearity. Another un-sual feature is that the plate and grid are ned to the same frequency, with no apparent eutralization. No instability resulted when drive was applied, due to the heavily loaded plate circuit and low mu of the 12K5. Finally, the LC ratio of the final output circuit is abnormally low. This is necessary if good Q and coupling characteristics are to be had. The output coil also serves as an impedence matching device, with a tap ¼ the way up from the ground end, which will reflect about 35 ohms to the antenna. Only when the antenna is tuned properly will the transmitter show any effort to load and careful attention to antenna resonance is necessary.

Adjustment consists of tuning the oscillator plate circuit to the crystal frequency. Oscillation will become evident by a sudden increase in the final plate current. This can be checked as the crystal functioning by noting the loss of oscillation when the crystal is disabled. With the antenna properly resonanced and connected to the transmitter, tune the final for minimum plate current. If obtainable, a field strength meter should be used to indicate maximum output. Especially with these low power conditions, the need to maximum output cannot be overstressed if any range is to exist.

For modulation adjustments, connect a scope from the antenna to ground, and adjust the drive for maximum audio output. R4 should be adjusted for minimum resistance with sufficient modulation capabilities remaining. These adjustments are important if best linearity is to be had. If no scope is available, adjust the drive on the low frequency side until 25 mils plate current in the final exists. This will approximate good linearity conditions.

Final efficiency of 80% was obtained, giving ground wave ranges of over 10 miles. With clear frequencies and skip, this can be increased manyfold. A byproduct of this unit was the possibility of fitting into the emergency operations of a medium size community. Its low initial cost and simplicity of operation should make it attractive for this use. ■

Components of Junk Box Mobile

C1—100 mmfd variable padder
C2—500 mmfd variable padder
C3—250 mmfd variable padder
C4—750 mmfd variable padder
C5—1000 mmfd variable padder
C6—1000 mmfd mica, fixed
C7—.02 mfd paper, fixed
C8—250 mmfd mica, fixed
C9—150 mmfd variable padder
C10—.05 mmfd paper, fixed
C11—.001 mmfd paper, fixed
R1—50,000 ohms, ½ watt resistor
R2—3,000 ohms, ½ watt resistor
R3—25,000 ohms, ½ watt resistor
R4—10,000 ohms, ½ watt variable resistor
R5—100,000 ohms, ½ watt resistor
L1—10 turns, #28 wire, ½ inch form closewound
L2—Broadcast antenna coil secondary
L3—20 turns, #28 wire, ½ inch form closewound
L4—10 turns, #28 wire, ½ inch form closewound
L5—3 turns, #14 wire, ½ inch form ¾ inch long, tapped ¼ from bottom
L6—Xmtr final grid choke, 2.5 mhys
S1—DPDT switch
S2—SPST on/off switch
T1—6K7 (see text)
T2—12K5
X1, X2—Fundamental mode crystals
TR1—Audio output transformer, 4 ohms to 2500 ohms nominal

The microphone can be replaced by any carbon microphone with a double throw single throw switch.

VHF CONTEST RESULTS

The April VHF contest activity was somewhat higher than usual. Six meter entries were received from about 150 stations in 21 states and Canada. Two meter scores numbered 80 from 20 states, Canada and Hawaii. 220 mc has only 5 entries, and 420 and up had none. Helen (W1HOY) managed to keep on top with 217 contacts and 45 sections for a total of 19,530. Right behind her were two dandy scores from K9HMB (Ill.) and K8ACC (Mich.) with 13,032 and 13,034. Pretty good going for six meters in the midwest. W8UMF (Ohio) managed 8,772 for third high. W3JMY (Pa.) came in fourth nationally with 6,696 closely followed by K6DTR/6 (Cal.) with 6600. Two meter high score came from K1CRQ (Conn.) with 120 contacts in 39 sections for 9,360 total. W2NKB (N. J.) was second with 7,056, and W6ASH (Cal.) pulled off 6,116 for a close third.

Two percent of the logs did not have any name or call on them. Five percent were not totalled. Six percent did not identify what band they were for. One half percent were completely illegible, and ten per cent would try the patience of Job.

Scores are listed below by state. Winners in each state are in bold-face type.

Arizona

Call	Contacts	Counties	Score	Band
W7QLZ/7	4	1	8	50

California

Call	Contacts	Counties	Score	Band
K6DTR/6	150	22	6600	50
K6RNQ	120	16	3840	50
W6OKR	89	16	2848	50
W6NZV/6	63	17	2142	50
W6BXN/6	33	19	1264	50
K6KYU	35	13	910	50
K6VXM	31	11	682	50
K6QXY	20	13	520	50
K6ITZ	11	6	132	50
W6ASH	139	22	6116	144
K6DTR/6	60	18	2160	144
W6OVR	46	17	1564	144
W6KZN	41	12	984	144
K6BHG	16	8	256	144
K6HYX	15	6	180	144
W6NZV/6	2	1	4	220

Connecticut

Call	Contacts	Counties	Score	Band
K1CRQ	120	39	9360	144
KN1CWC	40	12	960	144
KN1DDO	36	12	864	144
KN1DWL	37	6	444	144
KN1DMM	6	3	36	144

Georgia

Call	Contacts	Counties	Score	Band
K4DLE	26	9	468	50
K4GYZ	15	8	240	50

Illinois

Call	Contacts	Counties	Score	Band
K9HMB	181	36	13032	50
W9ROS	140	30	8400	50
K9LFO	90	21	3780	50
K9LTC	76	20	3040	50
W9EET	76	14	2128	50
W9QXU	86	10	1720	50
K9DXT	31	16	992	50
K9DTB	55	9	990	50
W9VGT	69	7	966	50
K9IQF	47	7	658	50
K9LSG	40	8	640	50
W9RSZ	39	6	468	50
W9EGI	39	6	468	50
W9PPW	55	4	440	50
W9JZE	10	6	120	50
W9NDK	64	12	1536	144
K9AJP	59	13	1534	144
W9FHS	48	11	1056	144
K9EEC	45	8	720	144
W9DJ	35	6	420	144
KN9IRG	26	7	364	144
W9RZG	35	5	350	144
W9JZE	12	6	144	144
W9LYA/9	24	2	96	144
KN9JCY	13	3	78	144

Indiana

Call	Contacts	Counties	Score	Band
K9GFQ	74	39	5762	50
K9GXI	73	39	5694	50
K9JRT	82	34	5576	50
K9KGJ	72	19	2736	50
W9ZJP	70	18	2520	50
W9BHR	38	22	1672	50
W9HPO	43	16	1536	50
K9BQF	28	15	830	50
W9MHP	25	9	450	50
K9AUW	15	7	210	50
K9AQP	30	8	480	144

Iowa

Call	Contacts	Counties	Score	Band
WØSMJ	14	9	252	50

Kansas

Call	Contacts	Counties	Score	Band
KØITF	30	7	420	50

Maine

Call	Contacts	Counties	Score	Band
K1GPJ	39	17	1326	50
W1GKJ	37	13	962	50
W1QXX/1	28	8	448	50
W1QXX/1	2	2	8	144

Maryland

Call	Contacts	Counties	Score	Band
W3KLA	78	23	3588	50
W3YQD	79	20	3160	50
W3AUT	53	18	1908	50
W3CYZ	31	10	620	50
W3KLA	13	9	234	144
W3YQD	5	4	80	220

Massachusetts

Call	Contacts	Counties	Score	Band
W1KBN	107	18	4052	50
W1JBA	71	16	2272	50
W1EZZ	47	11	1034	50
W1EGE/1	29	8	464	50
W1DDN	15	7	210	50
KN1GCU	79	12	1896	144
W1LMZ	65	10	1300	144
W1LQ	40	9	720	144
W1MTV	50	7	700	144
K1AGB	33	10	660	144
W1AHE	22	9	396	144
KN1GRF/M	20	4	160	144
KN1GOE	26	6	312	144

Michigan

Call	Contacts	Counties	Score	Band
K8ACC	133	49	13034	50
W8BKT	120	45	10800	50
K8AKQ	70	16	2240	50
W8GTK	44	14	1232	50

Missouri

Call	Contacts	Counties	Score	Band
WØODI	114	18	4104	50
KØABK	62	9	1116	50

Nebraska

Call	Contacts	Counties	Score	Band
KØIAN	31	9	558	50
KØWRT	19	7	266	50
KØBOO	15	4	120	50
WØWRT	15	5	150	144

Nevada

Call	Contacts	Counties	Score	Band
W7MAH	3	2	12	50
W7MAH	4	1	8	144

New Hampshire

Call	Contacts	Counties	Score	Band
W1TNO/1	65	18	2340	50
W1TNO	9	8	144	50

New Jersey

Call	Contacts	Counties	Score	Band
K2HLA	120	29	6960	50
K2OQQ	85	21	3570	50
K2TNW	35	12	840	50
W2NKB	126	28	7056	144
K2KJI/2	109	26	5668	144
K2LGN	107	25	5350	144
K2LSX	70	18	2520	144
KN2GJS	51	11	1122	144
WN2TIN	30	8	480	144
W2DZA	14	8	224	220
W2DWJ	15	7	210	220

New York

Call	Contacts	Counties	Score	Band
K2VIX	166	31	10292	50
K2CBA	89	36	6408	50
W2TCU/2	92	20	3680	50
K2BVC	80	22	3520	50
K2TGR	100	17	3400	50
W2YLM	65	26	3380	50
K2DLM	67	23	3082	50
K2TFY	57	25	2850	50
K2SJB/2	62	17	2108	50
W2SZ	56	17	1904	50
K2VAW	56	14	1568	50
K2RYE	64	12	1536	50
W2KIJ	50	15	1500	50
W2QPC	48	14	1344	50
K2SAH	55	12	1320	50
W2RHQ	44	12	1056	50
K2OOY	34	13	884	50
K2GEK	29	10	580	50
W2EMW	30	6	360	50
K2CUQ	19	7	266	50
K2OUG	16	7	224	50
K2JIM	16	6	192	50
K2HSY	92	25	4600	144
W2IGS	72	14	2016	144
W2CLE/2	59	14	1652	144
K2MBJ	54	11	1188	144
W2SZ	45	11	990	144
W2QPQ	36	13	936	144
K2TBU	40	11	880	144
K2OZH	35	11	770	144
K2MYS	33	10	660	144
K2RTH	27	11	594	144
K2ZIC	38	7	532	144
KN8JLC/2	41	6	492	144
W2DMI	29	5	290	144
K2UOY	9	7	126	220
K2DLM	6	3	36	144

North Carolina

Call	Contacts	Counties	Score	Band
K4KSM	1	1	2	50
K4ONO	2	1	2	50

Ohio

Call	Contacts	Counties	Score	Band
W8UMF	129	34	8772	50
K8IYW	78	15	2340	50
W8WPC	61	18	2196	50
W8IMK	47	11	1034	50
W8GKB	24	2	96	50
W8SFG	41	26	2132	144
W8PBX	52	12	1248	144
W8PLQ	17	10		
K8CEC	6	2		

Oregon

Call	Contacts	Counties	Score	Band
W7LUH	9	4		

Pennsylvania

Call	Contacts	Counties	Score	Band
W3JMY	93	36		
W3OMY	82	23		
W3BWU	80	11		
W3HFE	75	11		
W3AWU	50	12		
K6IBY/3	37	13		
W3TIF	36	11		
W3FMF/3	18	8		
K3DGT	16	6		
W3ZIM	12	6		
W3UJP	17	4		
W3JLU	70	28		
W3IKZ	39	19		
W3TDF	18	14		
KN3AKR	11	4		

Rhode Island

Call	Contacts	Counties	Score	Band
W1LYT	71	18		
W1CSG	49	15		
KN1BZA	70	15		
W1EIZ	68	14		
KN1DUO	37	11		
KN1DFU	27	8		
W1GFH	2	1		

Tennessee

Call	Contacts	Counties	Score	Band
K4OSF	42	15		

Texas

Call	Contacts	Counties	Score	Band
K5OCS	80	8		
K5DCQ	67	8		
K5BDL	64	8		
W5FEG	59	8		
W5VXU	58	8		
K5AON	59	6		
K5CDP	49	6		
W5GMA	42	6		
K5JHR	35	6		
K5DXJ	30	6		
K5ADV	35	5		
W5HOD	28	4		
K5EWQ	32	3		
K5BQA	21	4		
K5KDY	21	4		
K5GHR	21	4		
K5ICV	23	3		
K5BLI	23	3		
K5CHF	20	3		
K5BXK	18	3		
W5KSK	16	3		
K5JUS	11	1		
W5TYS	8	1		

Vermont

Call	Contacts	Counties	Score	Band
W1QXX/1	50	14		
W1EXZ	5	5		
W1QXX/1	4	2		
KN1GFI	3	2		

Virginia

Call	Contacts	Counties	Score	Band
K8JNF	40	13		
K4SKR	32	11		
W4BHD	7	4		
W4LTU	37	22		
W3MSR/4	28	11		

West Virginia

Call	Contacts	Counties	Score	Band
W3DHQ/8	52	20		

Wisconsin

Call	Contacts	Counties	Score	Band
W9JFP	133	42		
W9JCI/9	93	27		
W9TQ	34	12		
K9HJI	36	8		
K9COP	12	5		

Ontario, Canad

Call	Contacts	Counties	Score	Band
VE3DSU	16	8		
VE3AIB	7	4		
VE3DNK	77	14		
VE3BHZ	61	15		
VE3AIB	60	13		
VE3DUU	60	10		
VE3AEZ	37	8		
VE3DWQ	17	4		
VE3CGV	13	4		
VE3DSU	10	3		

Hawaii

Call	Contacts	Counties	Score	Band
KH6EE	4	3		

VHF

by **SAM HARRIS, W1FZJ**
P.O. Box 2502, Medfield, Mass.

50mc. 144mc. 220mc. 420mc. and above

The CQ World-Wide VHF Contest

ATTENTION!

Proclaiming to the entire environs of the world a new, colossal and magnificently unique "CQ" world-wide. VHF contest.

Who: All radio amateurs with VHF equipment anywhere, yup, anywhere in this wide, wide world

When: From 8:00 P.M., local standard time, Saturday, August 23rd, to 8:00 P.M., local standard time, Sunday, August 24th.

Why: To promote VHF operation throughout the world, and provide VHF'ers with a chance to see if their rigs still work.

How: Just get on and call "CQ-Contest," hang on to your hat, but follow the

Rules: (A) **Single-band operation:**

(1) Single-band operation on any one of the VHF bands may be considered for award.

(2) Contest contacts on a single band must contain the following information exchange: Section and state (or country), signal report, contact number, and handle. Also, two way acknowledgment must be made.

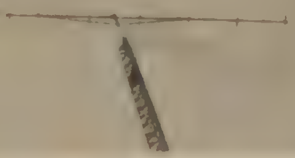
(3) Sections are as they were in previous contests. That is, a section in the U.S.A. or Canada is the county in which the station is located. In other countries, the equivalent political subdivision (i.e. cantons in Switzerland, etc.) counts as a section.

(4) Scoring is as follows: each contact completed counts two points (Uncompleted contacts count zero): the total number of contact points times your multiplier gives your total score. Now, drag out your Philadelphia lawyer cuz we have gone and changed the furschlunginger rules. SO————the multiplier consists of the product of three, count them, three numbers as follows:

(a) The number of sections;

(b) A multiplier equal to the *total* number of hours of contest operation; (a contest hour

Japan's number 3 C.C.C. holder, Mitsuo (JA1AAT) sent in cards from all over the world. Looked more like a WPX entry than a six meter effort. Number One 6 Meter Century Club winner used this beautifully constructed array. Paul (W6BAZ) doesn't say what it is but we all know what it can do.



Argentina's number 1—6 Meter C.C.C. holder, Mike (LU3DCA) used this wide spaced four element beam. Can't imagine what that one on top is for.

The 6 Meter Club of Dallas decided to get a perpetual trophy, to go to the club member with the highest score in each national contest that comes up. In the April contest the winner, on the left, was K5OCS, Dan Diamond, with 80 contacts in 8 counties. Club social director, K5DCQ, Vic Armstrong is giving it away. The Trophy is a gold mike mounted on a wood pillar, with a gold plate on the front, engraved. If anyone wins it three times they can keep it.

will qualify if at least one contact is made during that hour);

(c) A power multiplier of 10 for final power input of under 20 watts, a multiplier of 5 for power input less than 100 watts and greater than 20 watts, a multiplier of 1 for a power input less than 1000 watts and greater than 100 watts, and a multiplier of ½ for power inputs over 1000 watts.

This all means (if you haven't given up in disgust, by now) that if you have

200 contacts you have
400 contact points (200 x 2)

and if you operated a total of 16 out of the 24 available hours with a power input of 99 watts and worked a total of 45 sections, your multiplier would be 16 x 5 x 45 = 4050; and now your score would be the product of your multiplier times your contact points, ergo 400 x 4050 = 1,620,000.

Now isn't that pretty durn simple?

(5) Awards will be made to the highest scoring stations on each VHF band in every state or province in the U.S.A. and Canada, and to the highest scoring stations on each VHF band in every country from which reports are received. A special gold-plate plaque will be awarded to stations submitting scores in excess of two-million points.

(B) **Multiband operation:**

(1) Here's your last chance to beat "old John" (W8LPD) who has won the Microwave Associates' trophy *twice* running now. *The rules for multiband are just the same as t were last year and do not include the po and hours multiplier.*

(2) Awards will be made to the high scoring multiband station in every state, pr ince, or country as before, and the Microw Associates VHF Trophy will be awarded the world's highest multiband score.

(C) **Logs:**

(1) Logs should be complete in every de and should display prominently the itemi score and should be accompanied by a co sheet on which the total score, name, addr call and state of the stations must be clea printed.

(2) Logs should be postmarked no later t September 15th, 1958, in order to be coun in the results. Mail all logs to

Log Department
Microwave Associates, Inc.
Burlington, Massachusetts, U.S.A.

(3) Mail all complaints, criticisms, c ments and bombs to the Rhododendron Swa VHF Society, Attention W1BU, P.O. Box 25 Medfield, Massachusetts.

(D) Have fun and let's really flog the V bands for some real astronomical scores. you on six, two, two-twenty, four-thirty-t etc., from W1BU.

Masers and Such

My impassioned pleas for someone to m an effort to come up with a maser were all in vain. Larry Politzer (K8APG) from Dayton, Ohio (where else) made a determined effort and came up with a working model. Trouble is that Larry, despite the fact that he lives in the V H F center of the country, isn't active on the V H F and didn't make it to work in a ham band. If you are interested in a run down on his efforts, I would suggest dropping him a line (Address in the call book.)

Meanwhile the boys at the ranch have been busily thinking of some other way to get low noise figures and as usual they have come up with something new. This time it is an idea that a ham can really get his teeth into. Most of the articles pertaining to this device are concerned with a thing called a parametric amplifier. The most successful of these to date use some form of semiconductor as the active element. Their function is to provide a low noise preamplifier for weak signal amplification in the U H F and up region. They are not as fantastic as the Maser as far as noise figure is concerned but they are most certainly more practical from the home constructor's point of view. I do not have a working model of my own yet. I hope to have one going in time for the next issue. Meanwhile don't wait for me to do it. Get on the ball and do it yourself. The June 1958 issue of the "Proceedings of the IRE" has several references of interest and the June engineering edition of "Electronics" has an article on a harmonic amplifier for X band local oscillator use that you will find useful when you get to the actual building of your parametric amplifier. My first step is the construction of a crystal controlled converter for the 10,000 mc band. What's yours?

New Clubs

A new club has been formed in Huntington, West Virginia: the name, "The VHF Weather Birds." Officers—Pres. Ray Johnston, K8DFO; V.P. Dean Sturm, K8CYW; Sec. and Treas. John S. Hall, K8HRO. Have Rag Chewers Net every Saturday at 2000 on 50.10 mc. Club meets the third Sunday each month at 1430 at Huntington East High Trade School.

Buenos Aires, Argentina Our friend from the South, Michael Czysch, LU3DCA, has sent us some information from his country.

"I have now worked twenty-three countries on six meters, four of them (ZP, TG, HC, CO) as yet unconfirmed. All continents except Europe are accounted for.

"The equipment used is 80 watts on six, four element beam and cascode converter. On two meters the same power, twelve element beam and p.p. 6J6 converter.

"On May 15th I had my last contact with U.S.A. at 2148 GMT with W5JKB. K5HVC was heard the same day but didn't come back to the calls. May 16 the band was open to the north in the evening; May 18 to the north in the evening (XE1GE). May 19 to the north at noon, May 20 to the north and Europe at noon, May 31 to the north in the evening, and yesterday (June 1) from 1830 to 2030 GMT we heard a TV transmission (video) on 49.75 mc with S9++ but again no amateur signals." *Makes very interesting reading to all of us, Michael, thanks for the information. Also congratulations on Six Meter Century Club.*

Guanajuato, Mexico Another of our DX neighbors comes through, this time it's Rusty LaNier (XE1PY):

"Herewith is a log of stations worked and heard on six meters, May 25, 1958. At least some of the boys heard will be glad to know. All were called but the small rig I was running didn't make the grade in all cases. Expect to have a better set up shortly."

0709—W0IBL
0729—K8AGU
0734—W5KTD
0750—W8STX
0758—W5JXV
0805—W5NDE
0814—K5DCQ
0820—K5AON
0824—K5DXJ
0827—K5EWQ
0836—K5IPL
0841—W5FTH
0852—K5HVC
1016—W9DSP
1334—W5SFW
1408—W5AHG/5
1441—K5BWF
1525—K4GAQ
1538—K4BSR
1544—K5AJF
1551—W4HZP
1557—K4BWK
1607—K4KIF
1639—K4IDX/5
1915—W6TLA
1928—K6ERG
1956—W6BAZ
2003—W6AJF
2022—W7FFE
2029—K5ALH
2055—K4HJB

"The foregoing stations are stations worked. The following stations are the ones heard but not worked."

0702—VE3AEJ
0707—W8UNF
0724—W5FBD
0905—K5HVC
1325—W0EQE
1351—W0EQE
1628—W4UUF
1635—W4UUF
1650—W9CFI
1658—W8PFU
1940—K6GOZ/M

Fine business, Rusty. Bet the fellows you didn't work, don't feel too good about it though.

Anchorage, Alaska Word comes from the cool country, via Jack Reich (KL7AUV).

"Activity has been nil here since February 1, when we heard the W-KH6 activity via backscatter. *What that backscatter does bring in!* Signals were only heard with beams toward KH6 land. I have been in Oklahoma City since March 7th, just returning last Friday (April 25, '58). Expect to join KL7CDG and others in a careful watch of 50 mc from now on."

"Since November 5, 1957, I have made a total of 665 contacts on six meters outside of the local area. Have received cards from 363 of these contacts." *Is that all! Is Alaska easy to get in some places on 50 mc.*

"334 of these contacts were made since January 1, 1958, and out of 188 cards I sent, I received confirmation of 152 contacts. *Pretty good.* Of interest is the fact that ten of the 152 cards I received were dated January, 1957, in error. This poses no particular problem to me, but I imagine others would be mightily displeased with similar errors." *One card we received (with a batch) was dated 1959.*

"To date, I have 36 states actually confirmed, one VE3 contact, several KH6 contacts, and over 30 JA contacts. Have thoroughly enjoyed the activity, and hope to keep it up."

"I have received the WASD award from San Diego, for working 15 San Diego six meter stations." *Congratulations, Jack, on a wonderful job of operating. The few times the band was open from here to your area, we listened to you countin' 'em off.*

Fresno, California We hear from the sunny clime via the U.S. mail and Gib De La Laing (W6BJI):

"Will try to sketch the six meter activity over the past couple of months here in the San Joaquin Valley. ZL's contributed most of the DX during this period with the New Zealand gang coming through on March 1, 2, 4, 5, 8, 12, 13, 18, 19, 20, 22, 26: April 1, 15, 16, 17, 18, 19. Worked a total of fifteen different ZL's in all districts. VK's were in on March 15, 20, 26: April 16, 18. South Americans were in on March 12, 21, 22, 25: April 17, 21." *Helen is drooling.*

73, Sam, W1FZJ

by **DON CHESSER, W4KW**
R.F.D. 1, Burlington,

DX DX DX DX DX DX DX DX

We've been very busy this month, as evidenced by the length of the following list, but so have the following, who finally won WAZ this month:

#566	W3FYS	C. E. Weir	(27th W3)
#567	JA5AI	Hideto Yamasita	(1st JA5)
#568	OH5PE	Thor Wiksten	(3rd OH5)
#569	K6EVR	Ronald Camp	(154th W/K6)
#570	W2MUM	Elliott Wolheim	(26th W2)
#571	W7HIA	Herb Gilbaugh	(32nd W7)
#572	W1QNC	Walter Hall	(10th W1)
#573	W8YIN	Mickey Unger	(31st W8)
#574	W6TKX	Dick Schellenbach	(155th W6)
#575	DL7AH	Harry Lilienthal	(14th DL)
#576	W1FZ	James E. Thayer	(11th W1)
#577	F3AT	Ivan Pastre	(2nd F)
#578	W2WS	John M. Jeffords	(27th W2)
#579	OE1FF	Frank Friedl	(3rd OE)
#580	W6KG	Lloyd D. Colvin	(156th W6)
#581	K6LZI	George H. Reifenstein	(157th W K6)
#582	OH2HK	Reino Janhunen	(3rd OH2)
#583	W3LMA	Edward Dillmeier	(28th W3)
#584	W2AZS	Charles Bouteiller	(28th W2)
#585	G8KP	W. T. Pickard	(7th G8)
#586	W5NUT	Gillia Wood	(24th W5)
#587	OK3HM	Jozef Horsky	(1st OK3)
#588	W2GT	A. Edward Hopper	(29th W2)
#589	W3LMO	Joseph Papp	(29th W3)
#590	ZC4IP	George F. Barrett	(1st ZC4)
#591	CN8JX	Glenn H. Luse	(2nd CN8)
#592	W3NKM	Stanley S. Springer	(30th W3)
#593	W6RZS	C. M. Cherrigan	(158th W6)
#594	W2HSZ	F. J. Enge	(30th W2)
#595	VO1DX	Horace W. McNeill	(1st VO)
#596	JA6AO	Akira Nishida	(1st JA6)
#597	PY1HQ	Welodimer Back	(6th PY1)
#598	G8KS	S. L. Hill	(7th G8)
#599	W7SGN	Phil C. Anderson	(33rd W7)
#600	W2DGW	John Lubinski	(31st W2)
#601	W7ADS	Glenn Lay	(34th W7)
#602	W8IRN	R. F. Johnson	(32nd W8)
#603	W4EO	Robert M. Cook	(20th W4)
#604	W2HZY	George W. Wright	(32nd W2)
#605	W9BPW	C. W. Tinsley	(23rd W9)
#606	W9GDI	John W. Turner	(24th W9)
#607	W4CXA	A. Prose Walker	(21st W4)
#608	W6SQP	James L. Hanson	(159th W6)
#609	W2QHH	H. S. Bradley	(23rd W2)
#610	W3KPI	Carlton L. Williams	(31st W3)
#611	W4DQH	Claude W. Bass	(22nd W4)
#612	W1ZZK	Robert C. Beisinger	(12th W1)
#613	VE1PQ	Doug Johnson	(18th VE1)
#614	W2BBS	Bill Peuser	(34th W2)
#615	W1FFO	T. D. Hale	(13th W1)
#616	W8TLL	Robert J. Pastorino	(33rd W8)
#617	W9FDX	Douglas A. Pavek	(25th W9)
#618	W5NW	W. M. Groves	(25th W5)
#619	W8CQ	Franklin Dunn	(34th W8)
#620	W0KOK	Otto J. Degner	(22nd W0)
#621	G4TM	T. A. Maguire	(3rd G4)
#622	W5LGS	William Obrist	(26th W5)
#623	W6CAE	L. N. Higgins	(160th W6)
#624	ON4QX	Louis Th. Berge	(5th ON4)
#625	K6ENL	Aleta B. Cash	(161st W/K6)
#626	W2PZI	Dick Malanowicz	(35th W2)
#627	PA0LY	W. Blommaart	(2nd PA0)
#628	W9EHW	A. L. Patrick	(26th W9)
#629	W9GIL	John Scarvaci	(27th W9)
#630	W5URU	Chris Cook	(27th W5)
#631	F9MS	Claude Ronsiaux	(1st F9)
#632	VE7MD	J. Black	(6th VE7)
#633	DJ2BW	Hermann Samson	(1st DJ2)
#634	OH1QE	Olof G. Ahotupa	(2nd OH1)
#635	VE2WW	Don McVicar	(1st VE2)
#636	GM3EST	Andrew Sinclair	(2nd GM)
#637	W0PGI	Joe Novak	(23rd W0)
#638	K9AGB	Steve Tumo	(28th W/K9)
#639	KH6AYG	Jack Shibata	(13th KH6)
#640	K9DNR	"Uncle Dick" Tlapa	(29th W/K9)
#641	DL3AO	Rolf Schick	(1st DL3)
#642	DL3RK	Walter Geyrhalter	(2nd DL3)
#643	G3BHW	E. J. Hancock	(10th G3)
#644	W1BGA	Leonard M. Luther	(14th W1)
#645	W4JAT	John I. Tremanian	(23rd W4)
#646	W8HMI	Frank Smith	(35th W8)
#647	F8EJ	Rene Frere	(2nd F8)
#648	W7WVE	Dick LeMassena	(35th
#649	W9BZB	M. W. Price	(30th
#650	W3HZQ	W. H. Johnson	(32nd

Whew! We haven't more space but to s
"congratulations!"

DX News

The battle of DXCC continues, seemingly
ever-increasing intensity, over the more rec
country reshuffling and committee actions.
understand ARRL is under bombardment
irate letters and telegrams, protesting the co
fusion. Especially interesting these days are t
VP2 situation, combining Jamaica and the Ca
man Islands, and nullification of credit for t
recent Kermedec Islands QSOs.

Writes G6QB: "Islands such as Fernan
de Noronha, Trinidade, Clipperton—of whi
none of us had ever heard before a DXpediti
made a landing and put them on the air—a
"countries"—but not Tasmania, or Dicks
Island, or the Aleutian Islands, or even Sicil
with its own prefix! For a hundred years t
various islands of the British West Indies, su
as Antigua, Dominica, St. Kitts-Nevis, Grenad
St. Vincent, and so on, have been issuing the
own stamps, but have counted merely as tw
countries—Leewards and Windwards. Yet no
after the formation of the West Indies Feder
tion, we are informed (not, mark you, by an
one in the U.K. or concerned with the Crow
Colonies) that they will in future be count
separately!

"Ruanda-Urundi, with stamps, boundari
and separate prefix of its own, simply counts
"Belgian Congo"—which it is not! Yet a ro
with a lighthouse on it (Navassa) is a separa
country.

"Gold Coast and Ghana"—the same pla
with the same people operating the same ge
—count as two separate countries accordi
to whether you worked those people befo
or after March 4, 1957. And if you work
an Englishman signing VP8 on, say, Sou
Georgia, you could count that as a "countr
but not if you worked an Argentian or Chile
national sitting on the same piece of grou
and signing LU or CE.

"When Saarland reverted from 9S4 to D
(March 31, 1957) it ceased to count as
separate country; similarly, I1 (Trieste)
came Italy again on that same date. What h

pens to SU and YK contacts made respectively before and after the Federation we do not pretend to know. If you worked an SU and a YK before the Federation they counted as two countries; had you worked the same two stations afterwards, they could have counted as (a) two countries; (b) one country (a new one?); or (c) one country (but one of the old ones). Five points for a correct answer, if anyone recognizes it when they see it."

All this controversy and confusion, in part, influenced the CQ DX Department decision to drop the countries system of scoring and adopt WPX. Even so, DXCC is traditional and time-honored, and we hate to see it muddied by so much turmoil. Isn't it about time the DXCC committee be composed of representative top DXers of the world, rather than in one office? We mean no disrespect, but we do need DXCC stabilization and direction.

Those new countries in the West Indies are getting plenty of attention this summer. VP2DA and VP2KM are active on 14 mc phone; VP2LB, VP2GX, VP2GV, VP2DJ, and VP2AB on 21 mc phone; VP2SH on 7 mc phone and CW; and Danny, VP2VB, will be working these islands from July until November. At this writing, he's at KV4AA, then he goes to Aves Island in company with two YV operators to put YV0AA and YV0AB on the air from July 3rd through the 10th. Then Danny returns to KV4AA, after which he goes to the British Virgin Islands for another stand.

Chas, F9RS, reveals this year's PX1FC DXpedition has been cancelled. Only he and F8FC, it turned out, were able to go. They are now planning the trip for 1959.

W6BYB and W6CLS, to operate phone and CW respectively, have set up an expedition to VR2, VR5, and KS6, starting about July 12th. They hope to pick up a VR2 in Suva and continue to VR5, the entire trip lasting five weeks. They will get on from KS6 if at all possible to arrange the transportation.

FB8YY, the French Antarctic Expedition, has suspended all amateur radio operations because of other duties, and because the station QRMs the meteorological equipment, continues F9RS. They hope to correct the situation soon.

Peter Naish, G3EIX, was the second foreign visiting ham to be licensed, as PJ5CB, under the new 15-day-per-year Netherlands West Indies licensing system. The first was his good friend G5RV, who appeared last spring as PJ5AA, et al.

If you missed the last Trinidade Island, PY0AN, expedition there's another abrewing by PY1CK, PY2CK, PY7AN, and PY1HK, for the last week in July or the first of August. This one should be bigger and better, writes Elmer, W3ROA.

A tale reaches us of a certain Australian ham operator, connected with the VK Antarctic IGY organization, who is reluctant to set foot back on the Australian mainland when his tour of duty is completed. It seems a public subscription was taken up to provide those adventurous explorers with a nice stainless steel bath tub at quite considerable cost, so that the poor motherless souls could keep themselves nice and clean in the frozen wastes. However, our hero had other bright ideas. The said bath tub is duly installed as a first class brewery vat. "T'would be sacrilege to sully it with unwashed humanity," he lets slip during a QSO with a friend back home in Australia. The following day the Australian daily press comes out with suitable headlines!

Nevertheless, as our hero aptly puts it, the home-brew is shimply delischisch!

OR4VN, Henri, of the Belgium Antarctic Expedition, located at 70S, 24E, will be in operation until January, 1959, provided their ship can reach them by that time. Henri runs 150 watts to a rhombic on Europe. He's unable to operate on a firm schedule but may usually be found around 14010 kc CW at 1900GMT. The Russian Antarctic Expedition has blossomed out with several new stations, other than the Mirna Base, including UA1KAE/4, UA1KAE/6, and UA1KAE/7, the latter located at the south geomagnetic pole, 78S-86E. VK0KT, Macquarie, has been very active most mornings at about 1300GMT on 14195 kc phone. QSL via VK2EG.

ON4UB is currently on the air from the Brussels World Fair on 14140 kc phone.

Lee, W8CED, writes of a visit by HA5AM, airline pilot on the Hungary-Scandinavian run, to the shack of SM5AHK, and the news that HA5AM/ZA operations are a thing of the past. Albania no longer will permit ham activities by any foreigner, even Hungarian. And there are no legitimate, licensed ZA stations. I1AFS, station of the Allied Forces Southern Europe, in Naples, manned principally by W8KJP, is planning a hamming trip to San Marino, M1, this summer or early fall. I1ADW can't make it to San Marino this year, however.

All SV0 calls are reissued very quickly, writes Larry, SV0WP, with the probability of one being dropped one week and reassigned the next. Also, the call might be Crete one assignment, and Greece or Rhodes the next. But the chaps on Crete are planning much more activity in the future. Wes, SV0WN, puts out an excellent signal on 14 mc phone with 300 watts to a BC610 (he's not to be confused with the SV0WN of 1956 who didn't QSL!); SV0WB is currently very active on Rhodes, with plans for more CW in the future; SV0WE is on SSB; and Larry himself can be found mostly on 14080 kc CW from 0300 to 0400 GMT daily. He and other SV1 and SV0 stations but those mentioned above are located in Salonika or Athens and vicinity.

Byron, W9FYM, writes us of the possibility of new Afghanistan activities. YA1AA, Pete, formerly W9MOW from Lafayette, Indiana, an airline pilot flying the Near East area, has official permission to operate from that rare spot, he says. Further YA possibilities come from a ham in the American Embassy, Teheran, Iran, who is planning a trip to Kabul beginning the last of July and extending for several months.

Rundy, ex-XV5A, advises he is now operating as W3ZA/XV under a temporary provisional license pending further negotiations with new Viet-Namese officials for permanent permission. He has notified the FCC and asked them if this change in call letters would change the status of his station with respect to WQSOs. Rundy now has a KWM-1 and plans a visit to Laos (XW8) soon to give the SSB boys a new country. He just returned from a trip to Cambodia, where he reports chances of ham activity good within a year. Tom Moody, W3-COF, and Bernice, ex-W4EYS, XYL of the Senior Police Advisor to Cambodia, Jack Munroe, who is not a ham, are already on the scene.

Further from Zone #26, we learn the Singapore RAF boys are trying to promote a station on the Nicobar Islands. They are trying to get a license for that rare spot, but failing that they hope to interest Indian nationals now stationed on those islands. If it works out the equipment will be sent them by the RAF chaps.

In a letter to Phil, W3SOH, VR1A states he's never worked 15 meters. All those fellows who have recently worked VR1A on that band have worked a phony. VR1A was inactive during all of 1957, and plans no ham activity at all in the near future. Only VR1C is legitimate, and he works only 20 meter phone, although a new 65-watt rig now being shipped will get him on both phone and CW as soon as it arrives. There are eight VR3 stations on Christmas and Fanning Islands, VR1A continues. These islands come under the administration of the Gilbert Islands, and the VR3 licenses are issued by VR1A, himself.

Canton Island is getting better and better representation, on phone. KB6BK and KB6BL are new calls, and plan to operate SSB exclusively with a KWM-1/Mosley Tri-bander combination. KB6BJ is very active on CW, and is looking forward to the CQ DX contest this fall.

ZL1AJU has indefinitely shelved plans for a proposed DXpedition to the Chatham Islands, an excellent possibility for a new DXCC country, because ZL3VB is active there already, on 80 meter CW. Ben, VR2DG, will be active, CW only, on 21066 and 28088 kc for the next six months. K6SXA reports him active between 0300 and 0500GMT.

After long silence ZC3AC is back on, but only for an hour or two a week. He's acutely embarrassed by QRM, we are told, and just couldn't care less.

On April 1, 1958, some EA9's (at Tetuan) changed their prefix to CN9. This should be good news to WPX hunters, but we don't know how it will affect DXCC. EA8BF and W6RI report EA9AW may be on from Ifni soon.

ZS6IF writes that he will be on the air a week of the second half of August fro Swaziland, signing ZS6IF/7, most probably 20 and 40 CW only. QSLs will be on a ca for card basis, and must go to his home QT in Johannesburg. He can't easily dispose IRC's but would rather have U S coin, you include return postage.

Under miscellany, we note VS90, Oman, active on 21330 kc phone daily after 200 GMT. Call him 5 or 10 kcs down, and QS via RSGB. KC6JC, Eastern Carolines, is a tive every Thursday on 14020 kc after 110 GMT. ZK1AK, a new one on from the Co Islands, is 13 years old!

QSL

CN8GU now has the ZD7SA logs and w handle QSLs, but you must send him a stamp and addressed envelope.

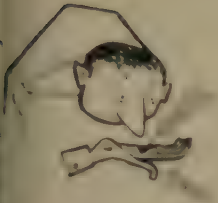
W2SSC has a bunch of VK0AB and VK KT cards at hand for W/K/VE distributio and VK0TC cards are enroute to him. The are for 1958 QSOs only. If you have one the above coming please forward a stamp and addressed envelope to: J. Driscoll, W2SS 50 Howard Dr., Buffalo 21, N. Y. Outgoi cards to the above stations should still go v VK2EG.

Sam Woodson, W0GXP, Box 483, Kearne Mo., has arranged to handle the stateside di tribution of JZ0PB cards. The usual rul apply: All cards will go via bureaus unle stamped and addressed envelopes are furnishe Sam for direct reply. JZ0PB, incidentally, active daily, particularly weekends, betwee 1300 and 1500GMT, a little above or belo 21250 kc phone.

ADDRESSES

CN8GU (ZD7SA)—Capt. T. R. Donova 1975 AACS, APO 117, New York, N.
CR4AH—Aeroporto dos Espargos, SAL, Cap Verde Islands.
DL4DH—CWO A. F. Lindsey, HQ USASA EUR, APO 757, New York, N. Y.
DL4TW—Roy S. Goldsmith, 549 Newcom St. S. E., Washington 20, D. C.
EL3B—Carl Sundberg, c/o LAMCO, Box 6 Monrovia, Liberia.
ET3PRS—P O Box 621, Addis Ababa, Eth opia.
FF8AC—Box 129, Kankan, French We Africa.
FP8AT—QSL via K2GMV.
HND9A—F. D. Fuqua, Daura Refinery, Bo 278, Baghdad, Iraq.
JZ0HA—Hugh, Box 420, Sorong, Dutch Ne Guinea.
JZ0PB—QSL via W0GXP.

[*Continued on page 115*]



by **DONALD L. STONER, W6TNS**
P.O. Box 137, Ontario, Calif.

semiconductors

It is interesting to watch as more and more manufacturers climb on the transistor band wagon. As predicted earlier in this column, you may expect to see amateur applications for transistors and silicon rectifiers increase. Many of the new communications receivers and transmitters will be using these silicon ectifiers in the power supply section to increase efficiency and reduce heat radiation.

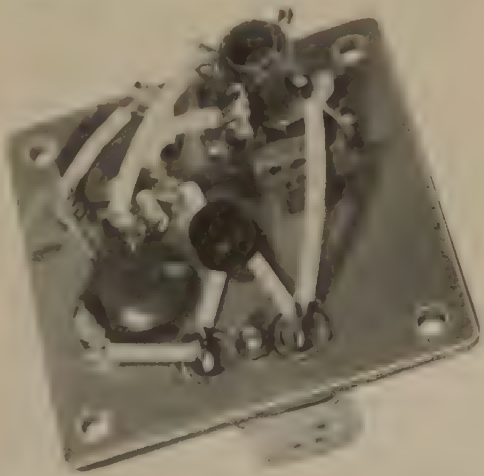
A new manufacturer of transistorized equipment for amateurs is Electronics Unlimited. Merlin Transistor Products Division, 31 Maple Avenue, Saratoga Springs, N. Y. They are currently producing an interesting line of transistorized subassemblies, including crystal oscillators, variable frequency oscillators and audio oscillators for single sideband alignment. Other units for the hi-fi trade are pre-amplifiers, variable reluctance compensated pre-amplifiers, and loudspeaker amplifiers.

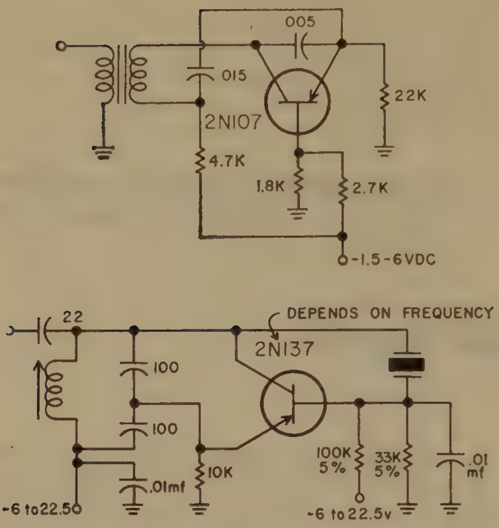
The three units for ham applications are shown here in photos and schematic diagrams. The TCO-1 crystal oscillator is available from 100 kc up and the coil and transistor are changed in the various models. The schematic shows a 2N137 transistor, for the oscillator, which has an alpha cut-off of 10 mc. In this circuit, feedback occurs between the collector and emitter and the crystal acts as a stablizing device. Feedback for the crystal occurs between collector and base with the .01 mf capacitor as part of an impedence matching network. Base bias is supplied by a voltage divider connected across the battery (100K and 33K).

The audio oscillator (Model TAO-1) circuit is standard but extremely good wave shapes are obtained by using a specially gapped transformer. The feedback path occurs through the .015 mf capacitor and the primary of the transformer. It is, in effect, a series tuned circuit. The .005 and .015 capacitors adjust the frequency of oscillation. With a dc input of 1.5 volts, the output voltage is .025 p-p. At 6 volts the output is .14 volts peak to peak.

Electronics Unlimited 400 cycle audio oscillator, Model TAO-1 (400). Construction is on a phenolic board and connections are make to "stake-on" terminals.

Underside view of the TCO-1 crystal oscillator showing the method of mounting the components. Transistors and tank coils are substituted for the various ranges.





Schematics of the Electronics Unlimited transistorized Amateur equipment.
Audio Oscillator TAO-1 -1200
Crystal oscillator TCO-1

Because of saturation, the best waveshape occurs at the lower collector voltage. The maximum current drain is .5 ma with 6 volts applied.

The variable frequency oscillator is an extremely clever device and has very good frequency stability. Feedback is between the emitter and collector through a capacitive voltage divider across the tank circuit. Rf output from the oscillator stage is applied to the base of the output transistor. This stage operates class A to prevent loading of the oscillator. Base bias is applied to both the oscillator and the emitter follower. The output stage is analagous to a cathode follower in vacuum tube circuits and has the same low impedance characteristics. Although the transistors are not specified, units such as the RCA 2N370-2N372 would work at frequencies up to 30 mc. This VFO is available in two frequency ranges, 3.5- 4.0 and 5.0- 5.5 mc, other frequencies on request.

An "out of this world" ham rig is described by the DuKane Corporation of St. Charles, Illinois. Shown in the accompanying photograph is the new satellite transmitter, employing all transistors. It consists of a crystal controlled oscillator driving a pair of transistors in push-pull. Western Electric transistors are used throughout. Although the transmitter weighs less than three ounces, and occupies less than six cubic inches of space, it is capable of 500 milliwatts *output*. The output stage of a conventional tube type of transmitter would require 4620 milliwatts of power to produce 500 mw output. By contrast, the output stage of the new transmitter needs only 930 mw to produce the same power output. The corresponding efficiencies are 11% and 54%. Although the circuitry for this transmitter h not been released, it will be made availa as soon as possible. Many of the DuKane gineers are hams.

New Literature

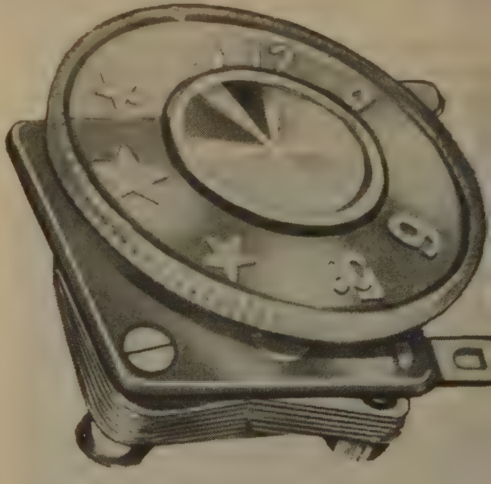
This month's issue of the General Elect Semiconductor Products Newsletter conta an interesting discussion of the Unijunct transistor plus a set of "tongue in cheek" ru on how to ruin transistors.

Sylvania Electric Products, Inc., Wobu Mass. with a new booklet on transistor app cations. It is titled "Performance Tested Tr sistor Circuits" and includes many circu (all new) of interest to experimenters, incl ing a voice operated relay. Price—35 cer Also from Sylvania is their Transistor Char teristics and Interchangeability Guide. Pric 10 cents. Both these publications are availa at your Sylvania distributor.

New Products

Many of General Electric's transistors have the tabulation removed. That's the lit exaust tip usually found at the top of package. GE started shipping these shor transistors about May 25. The characterist and designation remain the same.

General Electric Co. has reduced the pr on several of their transistors and silicon rec fier stacks. Be sure to check them, if you in the market. Also, GE has added two n tetrodes to their line, the 3N36 and 3N Three new switching transistors, the 2N6 635, and 636 have been added to the line.



Lafayette Radio introduces the new "Poly-Veri-Con" tuning capacitor. This device uses a polyethylene dielectric which allows much closer spacing than would be possible with the usual air construction. The PVC is one inch square and 7/16 inch deep! Amateur net price is 59 cents.

International Rectifier Corporation, 1521 .. Grand Avenue, El Segundo, California s marketing a voltage variable capacitor called he "Semicap." The Semicap has a "Q" of 000 plus at 1 mc with a 10 to 1 capacity atio well within its peak inverse voltage rating t −200 vdc. Bulletin SR-205 describing the emicap in detail is now available.

Lafayette Radio, 165-08 Liberty Avenue, amaica 33, N. Y. has just announced a new eries of minature transistor transformers. The R-97 is an input transformer with a primary mpedance of 100K and a secondary of 1000 hms. FB for crystal mike to transistor base he TR-98 is a driver transformer with an impedance of 10K to 2K. The TR-99 is push-pull collector to speaker transformer. The impedance is 500 ohms c. t. to 3.2 ohms. These hree new transformers are priced at 79 cents, ach Also from Lafayette is their new Poly-ar-Con tuning capacitor with polyethylene electric. The capacity is variable from 10 to 65 by means of a 1¼ diameter clear plastic nurled dial, calibrated from 530 to 1600 kc n 180° rotation. The capacitor measures one nch square and 7/16" deep, and weighs 5 z. The capicitor is designated MS-445 and ells for only 59 cents.

Sylvania Electric is now producing three ew microwave crystal diode mixers. The N26A, 1N53B, and the 1N78B are said to ave improved noise figure and greater RF impedance uniformity in the 13 to 35 kmc region.

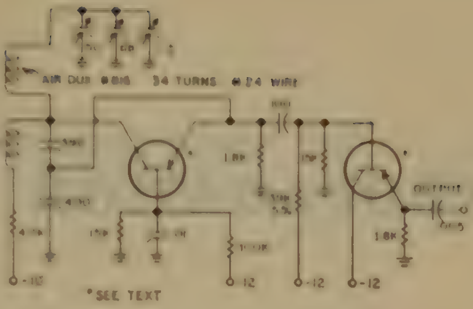
RCA has brought out a new slow speed witching transistor designated the 2N586. The ansistor is particularly useful as a relay actuating device and in voltage regulator, multiibrator, dc-to-cc converter, oscillator, and lass A and B audio amplifier circuits. Maxinum voltage is −45 volts and maximum disipation is 250 mw.

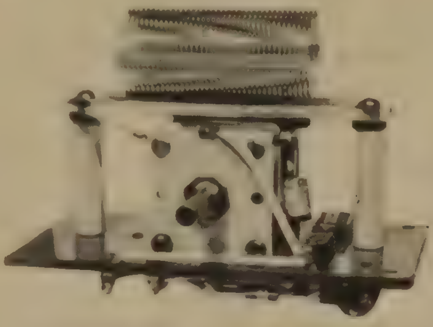
The new Sarkes Tarzian "K" series of silicon ectifiers have pig-tail heads and are rated to 750 ma with a max piv of 400 volts. The limensions of the new package are ⅝ inch ong by .4 inches diameter.

Motorola, Inc. Phoenix, Arizona has introduced several new audio transistors. The 2N650 hrough 2N655 are PNP types in the standard TO-9 package. These units are designed for general purpose applications in the audio requency range, including both amplifier and witching service. These units have a maximum unction temperature of 100° C.

Been looking for thermistors? Fenwal Elecronics, Inc, Mellen Street, Framingham, Mass

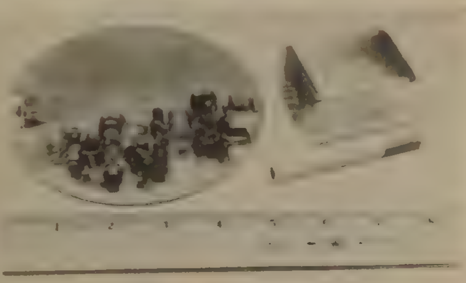
[*Continued on page 114*]





Electronics Unlimited's transistorized VFO.

The "Semicap" is a new silicon high "Q" voltage controlled variable capacitor. It is very useful in fm oscillators, for automatic frequency control, bandpass and filter networks where precision capacitance control is an essential design parameter. International Rectifier Corporation manufactures the device. For a free data sheet, see text for the complete address.



Satellite transmitter developed by DuKane Corporation is all transistorized and weighs only 3 ozs. The plug in unit at the right illustrates how the transmitter could be packaged for other applications. Sorry, the circuit is classified.

by GEORGE JACOBS, W3AS
607 Beacon Road, Silver Spring, M

PROPAGATION

Plotting Information For Fig. 1.

	1954	1955	1956	1957	1958	1959
JAN.	6	14	89	169	197*	146*
FEB.	5	16	99	171	195*	143*
MAR.	4	20	109	174	190*	140*
APR.	3	23	119	181	187*	138*
MAY	3.5	29	127	184	180*	135*
JUNE	4	35	137	188	174*	
JULY	5.5	40	145	192	167*	
AUG.	7	47	148	194	161*	
SEPT.	8	56	149	196	158*	
OCT.	8	64	154	198	154*	
NOV.	9.5	73	157	199.5	152*	
DEC.	12	81	162	199*	148*	

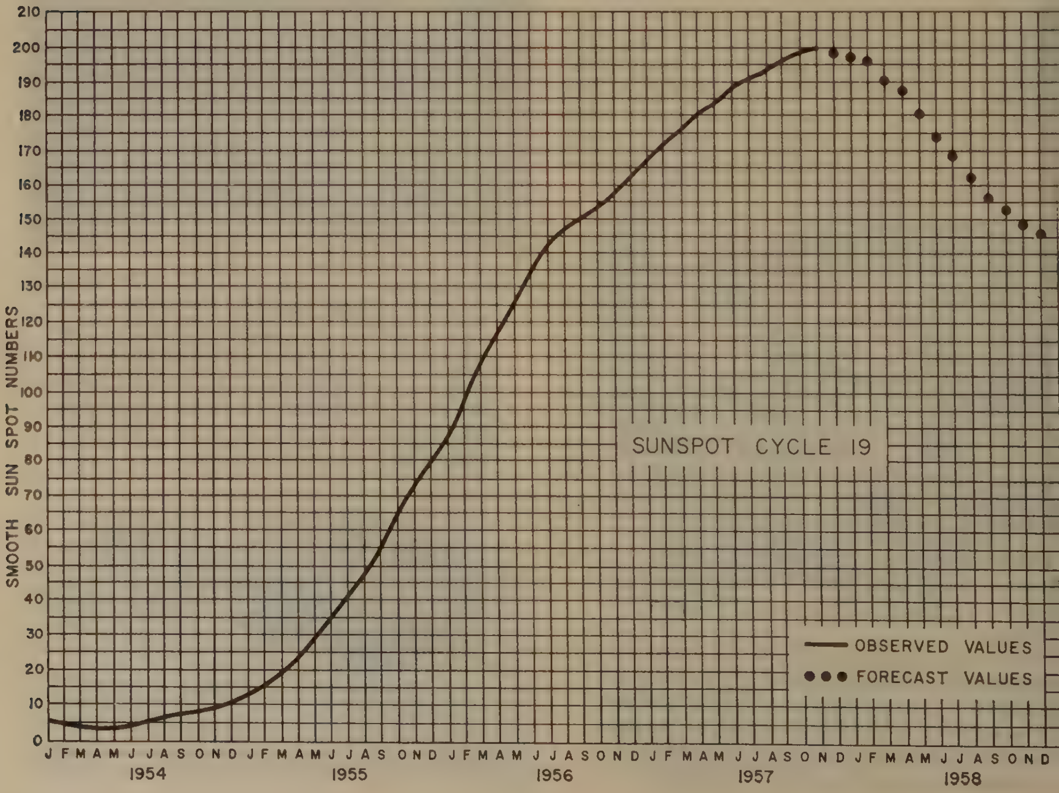
August's Highlights

During August, summer propagation cond tions are expected to continue. Static leve will remain high, sporadic-E openings fre quent, and not too much difference betwee day and night time maximum usable frequen cies.

While rew DX openings are forecast fo *6-meters* until later this fall, some sporadic- short-skip openings should occur during th month. The Perseids meteor shower will reac a peak during mid-August permitting som meteor type openings on the VHF bands. *Te meters,* while still in its summer slump, is ex

[Continued on page 125]

Fig. 1



Last minute forecast: Disturbed shortwave propagation conditions are most likely to occur August 4-5, 24-25 and 31. Seasonably normal for the rest of the month.

ALL TIMES IN E.S.T.

EASTERN USA TO: 10/11 Meters		15 Meters	20 Meters	40/80* Meters
WESTERN EUROPE	[illegible] [illegible] [illegible]	[illegible] [illegible] [illegible] 6P - 9P (3) 9P - 12M (2) 12M - 6A (1)	[illegible] [illegible] [illegible] 10P - 4A (2) 4A - 6A (2)	[illegible] [illegible] [illegible]
SOUTHERN EUROPE & NORTH AFRICA	[illegible] [illegible] [illegible]	[illegible] [illegible] 7P - 10P (3) 10P - 12M (2) 12M - 6A (1)	[illegible] [illegible] 5P - 11P (4) 11P - 6A (2)	[illegible] [illegible] 8P - 1A (1)*
EASTERN MEDITERRANEAN	[illegible]	[illegible] 9A - 1P (2) 1P - 5P (3) 5P - 10P (2) 10P - 12M (1)	[illegible] 6P - 11P (3) 11P - 6A (2)	[illegible] 8P - 10P (1)*
CENTRAL & SOUTH AFRICA	[illegible] 10A - 1P (2) 1P - 5P (3) [illegible]	[illegible] 2P - 4P (2) 4P - 6P (4) [illegible] 9P - 11P (1)	[illegible] 3P - 6P (3) 6P - 10P (3) [illegible]	[illegible] 8P - 10P (1)*
SOUTH AMERICA	2P - 6P (1)** [illegible] [illegible] 5P - 7P (3) 7P - 11P (2)	8A - 2P (2) [illegible] [illegible] 6A - 8A (1)	7A - 5P (2) [illegible] [illegible] 7A - 9A (2)	7P - 10P (2) [illegible] [illegible]
AUSTRALASIA	9A - 12N (1) 3P - 10P (1)	2A - 6A (1) 6A - 11A (2) 11A - 4P (1) 4P - 6P (2) 6P - 10P (3) 10P - 2A (2)	6P - 10P (3) 10P - 2A (3) 2A - 6A (3) 6A - 8A (3) 8A - 10A (2)	2A - 7A (2) 2A - 6A (1)*
GUAM & PACIFIC ISLANDS	NIL	2P - 4P (1) 4P - 10P (2) 10P - 1A (1)	6P - 10P (1) 10P - 3A (2) 3A - 6A (1) 6A - 10A (2)	NIL
JAPAN, OKINAWA & FAR EAST	NIL	8A - 10A (2) 3P - 5P (1) 5P - 10P (2)	7P - 9P (1) 9P - 3A (2) 3A - 5A (1) 5A - 8A (2) 8A - 11A (1)	NIL
MALAYA & SOUTHEAST ASIA	NIL	8A - 12N (1) 3P - 5P (1) 5P - 9P (2) 9P - 11P (1)	6A - 9A (1) 9P - 1A (1)	NIL
PHILIPPINE IS. & EAST INDIES	NIL	2P - 5P (1) 5P - 9P (2) [illegible]	6A - 9A (1) 6P - 12M (1)	NIL

ALL TIMES IN C.S.T.

CENTRAL USA TO: 10/11 Meters		15 Meters	20 Meters	40/80* Meters
WESTERN & CENTRAL EUROPE	12N - 2P (1) [illegible] [illegible]	6A - 11A (1) [illegible] 2P - 5P (3) 5P - 8P (2) 8P - 7A (1)	6A - 1P (1) [illegible] 4P - 8P [illegible] 8P - 12M (4) 12M - 6A (2)	8P - 1A (2) [illegible]
SOUTHERN EUROPE & NORTH AFRICA	7A - 12N (1) [illegible] [illegible]	7A - 11A (1) [illegible] 2P - 10P (3) 10P - 7A (1)	12M - 6A (2) [illegible] 2P - 4P (2) [illegible] [illegible]	8P - 12M (2) [illegible]
CENTRAL & SOUTH AFRICA	7A - 10A (1) 10A - 2P (2) 2P - 4P [illegible] 4P - 6P (1)	11A - 1P (1) 1P - 3P (2) 3P - [illegible] (4) 5P - 8P (3) 8P - 12M (1)	12N - 3P (1) 3P - 7P (3) [illegible] 11P - 4A (2) 4A - 9A (1)	7P - 11P (2) 8P - 10P (1)*
CENTRAL & SOUTH AMERICA	3P - 5P (1)** 7A - 2P (3) 2P - 6P (4) 6P - 10P (2) 10P - 12M (1)	6A - 9A (3) 9A - 2P (2) 2P - 4P (3) 4P - 11P (4) 11P - 6A (2)	2A - 8A (3) 8A - 10A (2) 2P - 5P (3) 5P - 2A (4)	7P - 4A (3) 4A - 7A (2) 8P - 3A (1)*
JAPAN, OKINAWA & FAR EAST	5P - 9P [illegible]	7A - 2P [illegible] 2P - 6P [illegible] 6P - 10P (3) 10P - 12M [illegible]	3A - 6A [illegible] 6A - 8A (2) 5P - 7P [illegible] 7P - 3A (2)	2A - 6A [illegible]
MALAYA & SOUTHEAST ASIA	NIL	8A - 11A (1) 2P - 7P (1) 7P - 9P (2) 9P - 10P (1)	6A - 8A (1) 6P - 10P (2) 10P - 1A (1)	NIL
HAWAII	8A - [illegible] 3P - [illegible] 5P - [illegible] 8P - 10P (2)	8A - [illegible] 2P - [illegible] 5P - [illegible] (4) 10P - 4A (2)	1A - 4A (3) 4A - 7A (2) 7A - 10A (3) 10A - 5P (2) 5P - 1A (4)	9P - [illegible] (2) 11P - 6A (3) 6A - 8A (2) 11P - 6A (2)*
AUSTRALASIA	3P - 5P [illegible] 5P - 8P (3) 8P - [illegible]	7A - 9A [illegible] 3P - 7P [illegible] 7P - [illegible] (3) 10P - 1A (2) 1A - 7A (1)	8P - 10P (2) [illegible] - 3A (4) 3A - 6A (2) 6A - 8A (3) 8A - 10A (1)	1A - [illegible] (3) 2A - 6A [illegible]*
McMURDO SOUND ANTARCTICA	12N - 2P (1) 2P - 5P (2) 5P - 6P (1)	1P - 3P (1) 3P - 5P (2) 5P - 7P (3) 7P - 9P (2) 9P - 11P (1)	3P - [illegible] 5P - 7P [illegible] 7P - 10P (3) 10P - 6A (2)	[illegible] - 6A (2) [illegible] - 4A [illegible]*
PHILIPPINE IS. & EAST INDIES	NIL	3P - 5P [illegible] 5P - [illegible] (2) 9P - 10P (1)	6A - 9A [illegible] 6P - 12M [illegible]	NIL

ALL TIMES IN P.S.T.

WESTERN USA TO: 10/11 Meters		15 Meters	20 Meters	40/80* Meters
EUROPE & NORTH AFRICA	3P - 5P [illegible]	7A - 9A [illegible] 9A - 12N (2) 12N - 5P (3) 5P - 8P (1) 8P - 12M (1)	[illegible] [illegible] - 3P (2) 3P - 10P (3) 10P - 1A (2)	7P - [illegible] (2) 8P - [illegible]*
CENTRAL & SOUTH AFRICA	1P - 3P [illegible] 3P - 6P (2)	7A - 10A [illegible] 10A - 2P (2) 2P - 6P (3) 6P - 12M (1)	5A - 8A [illegible] 11A - 2P (1) 2P - 6P (2) 6P - 10P (3) 10P - 12M (2)	6P - [illegible] (2) 7P - 9P (1)*
SOUTH AMERICA	10A - 3P (1)** 6A - 10A (2) 10A - 4P (4) 4P - 8P (2) 8P - 10P (1)	5A - 7A (3) 7A - 1P (2) 1P - 6P (4) 6P - 12M (3) 12M - 5A (2)	5A - 8A (2) 8A - 12N (1) 12N - 4P (2) 4P - 12M (4) 12M - 5A (3)	7P - 9P (2) 9P - 4A (3) 8P - 2A (1)*
GUAM & PACIFIC ISLANDS	12N - 4P (2) 4P - 8P (3) 8P - 10P (2)	7A - 10A (2) 10A - 12N (3) 12N - 4P (2) 4P - 8P (1) 8P - 12M (2)	10P - 12M (1) 12M - 6A (2) 6A - 8A (3) 8A - 10A (2)	12M - 6A (2) 1A - 5A (1)*
AUSTRALASIA	11A - 5P (2) 5P - 8P (4) 8P - 12M (3)	10A - 2P (2) 2P - 8P (1) 8P - 12M (4) 12M - 3A (2)	8P - 10P (2) 10P - 3A (4) 3A - 8A (2) 8A - 10A (1)	10P - 6A (3) 12M - 5A (2)*
JAPAN, OKINAWA & FAR EAST	8A - 12N [illegible] 12N - 7P (2) 7P - 11P (3) 11P - 12M (1)	[illegible] - 12N (3) 12N - 8P (2) 8P - 12M (4) 12M - 7A (2)	6A - [illegible] (3) 10A - 12N (2) 12N - 8P (1) 8P - 6A (4)	12M - 6A [illegible] 1A - 5A (1)*
PHILIPPINE IS. & EAST INDIES	8A - [illegible] [illegible] 6P - 10P (2)	7A - 10A (3) [illegible] 10P - 12M (2)	10P - [illegible] [illegible] - 4A [illegible] 4A - 8A (3) 8A - 10A (2)	3A - 6A [illegible]
MALAYA & SOUTHEAST ASIA	[illegible] 6P - 8P (1) 8P - 10P (2)	7A - [illegible] (3) 11A - 1P (1) 11P - 2A (1)	[illegible] - 4A 4A - 8A (3) 8A - 10A (2)	3A - [illegible]
HONG KONG, MACAO & FORMOSA	[illegible] [illegible]	[illegible] [illegible] 2P - 8P (1) [illegible]	[illegible] [illegible] 7A - 9A (2) [illegible]	[illegible] 3A - [illegible]*

[illegible] NUMBER OF DAYS CIRCUIT FORECAST TO OPEN

(1) 1 - 4 days (2) 5 - 11 days (3) 12 - 18 days (4) 19 - 26 days (5) over 26 days

** Indicates possible six-meter opening
* Indicates possible eighty-meter opening

Time Symbols:		
	A - A. M.	N - Noon
	P - P. M.	M - Midnight

The CQ Propagation Charts are based upon a [illegible] radiation angles less than thirty degrees and are centered in the Eastern, Central and Western areas of the USA. They are valid through September [illegible]. All forecasts are based upon ionospheric data published by the Central Radio Propagation Laboratory of the National Bureau of Standards, Boulder, Colorado.

by KENNETH B. GRAYSON, W2HD
110-20 71st Ave., Forest Hills 75, N.

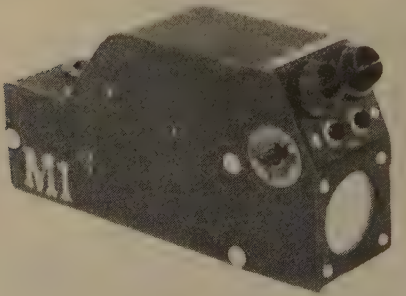
SURPLUS

Want an oscilloscope for ten bucks (no joke)? Well, we dug one up this month and it really works. Maybe it doesn't have the refinements of a three hundred dollar job, but it will allow you to monitor your signals and at that it is well worth the money. It will work on just about no power at all and can be made to work from a mobile or fixed station. K2JRI who takes the photos for this column saw it finished, and couldn't be held down till he found out where to buy it. (C&H, West Coast as well as others).

Wayne (alias Honorable Editor) spotted the ID-60/APG-15 on a recent trip to the west coast and dragged it back home. He threw it at us and said, "So . . . make it work." We did.

We took it apart removing everything but the controls and the pilot light assembly. The transformer, terminal board and diode tube socket went into the junk box. We tried tracing the circuit, but gave up after deciding that the scope had to be rewired. It is without a high voltage power supply as you get it, the transformer serving as a low voltage job to light the tubes. All high voltages are derived from the main equipment to which this unit is attached. The diode served some vague purposes, but not as far as we are concerned. The hardware is salvaged for future use in reassembling the scope case. All frills like the rubber pads and the clamps were removed as well as a nut attached to the sloping rear side of the upper chassis.

The scope socket was not disassembled, but by cutting the harness cord we were able to get at the leads. They were cut about ten inche from the scope socket and stripped and tinne for future use. The power plug and a lot of th wire became garbage, but the heavy viny tubing will find additional uses around th shack.



For mobile use the power may be obtaine from the transmitter and the power suppl therefore omitted. These will further cut th cost down. About 400 to 1000 volts may b used and the current drawn is only about half mil. The filament uses 0.6 amp. at 6.3 volts.

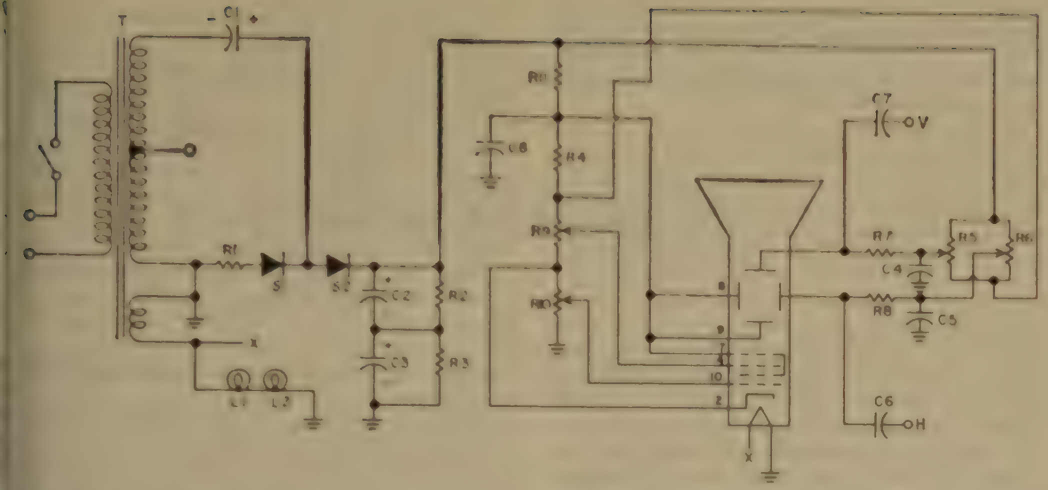
The first job in reassembling the indicator i to drill two one half inch holes on the rea sloping side of the upper chassis. This is to al low the two centering controls to be mounte with insulated washers. This is necessary be cause of the high voltage at which these part must operate at. Get the smallest diamete potentiometer that you can buy without goin to the miniature and sub-miniature sizes. They should be about one inch diameter or so. Mak sure that you mount these parts with insulate washers and use insulated knobs. We didn' have anything but screw driver adjust type and had to make an insulated shield for them

Wire a 100K one half watt resistor acros the focus control. Although this isn't show on the diagram, it will allow better centerin control of the beam spot . . . then complete th wiring of the scope. Don't connect the tw halves of the scope together yet, but mount th transformer using existing holes. Luckily th transformer that we got just fits some of th mounting holes of the original transformer an no new holes were needed.

Four, two contact plus ground lug typ terminal strips were soldered directly to th transformer frame, two on the back and tw on the front. The power supply component will be wired to the front ones and the rea ones will serve as terminals for C-6 and C-

TABLE I
PARTS LIST

T1—Stancor P8416
C1, 2, 3—4mfd 450 volt electrolytic
C4, 5, 6, 7—.01mfd 1600 volt disc
R1—50 ohm 2 watt
R2, 3—470kohm ½ watt
R4, 11—47kohm ½ watt
R5, 6—100kohm potentiometers
R7, R8—4.7 megohm watt
R9—Focus Control (orig al equipment)
R10—Intensity Control (o iginal equipment)
SI, 2—Diode Rectifier 1N2 or equivalent
L1, 2—Pilot Lamps (origi al equipment)



he input blocking condensers. R-11 and R-12 re mounted between one of these and the cen-er terminal of the centering potentiometers. t is important that the voltage ratings of all ondensers be followed carefully since the volt-ges that the scope uses are well above the atings of the usual disc types.

The voltage doubler circuit is tricky in as much as the diodes must be capable of with-tanding twice the usual ratings for selenium ectifiers. Therefore, use two standard type ectifiers of the smallest size that you can get usually about ten or twenty ma.) in series for ach diode shown. We used high voltage diodes n the interest of saving space and getting every-hing inside the case. It is possible that you nay have a lot of seleniums around and they nay be used—providing they are used in series nd that they are insulated to prevent anyone rom coming in contact with the high voltage he plus marking on a diode is the cathode nd sometimes this is shown as the bar side f the symbol, the pointing triangle is the an-de. The output of the power supply is about 00 volts and the usual high voltage pre-autions should be taken. Make sure that the arts all fit within the indicator case with the over on— . . . it can be done.

The signals should be fed to the scope using hielded or coax wire. Since there is no ampli-ications, the signal required will be fairly large . . somewhere about 100 volts. The unused entertap of the transformer may be used to upply sweep voltages of 60 cycles. If this is oo great to allow the signal to be seen it may e reduced by using a potentiometer of about half megohm across the centertap and ground, nd taking the output from the center arm to he input capacitor.

To operate, the centering controls should be urned to a mid-value and the focus and inten-ity controls set to give a small spot of light. The spot is then finally centered and the scope s ready to go. The total time it took to convert his scope was about three hours and that included the design of the necessary circuits. For specific operating instructions refer to any good handbook.

Chatter

Most of the mail for the last month or two has revolved around the item we converted recently . . . the TBS receiver, and where to buy it. Just for the record, we got our unit at Rex Radio, 88 Cortlandt Street, New York City, N. Y. We stopped in to see them the other day and found that they had none left, but were expecting a few more shortly and could probably take care of the orders that they get— . . . I suggest that you write them first and check and see if they can help you out or you may be a bit disappointed . . . another thing that we found out was that antenna mount that we mentioned for about half a buck (June CQ) will probably run a little higher than that due to additional mailing costs.

Tom, K2VBI, our foreign publications editor informs me that there is a surplus British job that covers 80 through 6 meters transmitting with a 50 watt power output. It should sell for about twenty-five pounds plus shipping in the States . . . follow his column for more details.

People are really digging into surplus of old and odd types. Just a look at the handbook requests will show this to be true—. . . we don't think that the bottom has anywhere been reached in this field. The new stuff that is coming out is really good. I saw a Navy RAL last night and did some copying of CW. (I still don't like it) but it really turned out to be much more sensitive than I had thought. I remember using some of these when I was stationed at NSS during the war and they are still as good as ever. They are really a TRF with regenerative detector and a series of audio filters to tune out interference. I didn't do so good with the SSB sigs, but otherwise it is a good buy for the novice as well as others. The selling price is as low as 20 bucks plus power supply on the West Coast (Arrow) and well worth thirty with the power supply. The RAL only goes to 23 megacycles, but it is continuous from 300 Kc, so you have the ship and broadcast frequencies as well.

Another thing that Arrow has is a rotary converter from 6 volts to 12 volts and at a couple of amps too. Should be good for the use of equipment for mobile from one car to another. They claim that it can be used from 12 to 24 as well, or even in reverse. For about 18 dollars too.

Roaming about the city we came across Telemarine. They just relocated and are a lot easier to get to. They seemed very co-operative and since the owner is an old timer as far as ham radio goes, he usually knows what you can do with most of the gear he has.

In retrospect, we have had a lot of mail regarding the CRC-7 and much of it was because of the little bit of info that is available on it. As a word to be added, to already accumulated knowledge, don't forget to tune the receiver as well as the transmitter when setting the equipment up. It seems that a lot of readers expected to merely plug in a crystal and get the thing right on frequency. It is simple, but by and large it is not that simple. The transmitter and the receiver require tuning and all transmitter controls are available from the top of the can, while the receiver is tuned from the side, by adjusting a slug. In either case, make sure that the antenna is on. Failure to use the antenna will result in loss of signal due to the mismatch and detuning when the antenna is connected. Batteries should be at least 90 volts. The unit we had was retested at 67 volts and the sensitivity was good, but the transmitter dropped off. Range is good, but still almost line of sight and again make sure that the full case is used, since the bottom part, holding the batteries will serve as a part of the antenna.

With regards to the TBS, we found (and hereby apologize) that a ground was omitted. It should be on the left cathode of the oscillator-mixer. The reason that the actual coil dimensions were not given, was that they have to be tailored to the tuning condenser that you use with the aid of a grid dipper. Actually they seem to be about 5 turns, tinned number ten wire about one inch diameter spaced to get to the proper frequency with the tuning capacitor across it. I hope that answers the many questions regarding this coil . . . we won't let it happen again.

This month we have quite a few requests for handbooks and data. We act only as an advertiser, with all swapping done between interested persons . . . not via CQ. But . . . if you need any particular handbook, conversion data or schematic don't hesitate to write a line and let us know . . . just a postcard will do and the request will be in the earliest possible issue of CQ. It takes about six weeks from the time the column is made up till the magazine is sent out, so please bear with us.

Ray Lawrence of 33 Frewer Avenue, Fa water, Cardiff, Glamorgan, S. Wales is looki for all of the BC-312N information he can fin There should be a lot of it in the British Isle so many of these sets having been left after t end of the war . . . Bob Farmer, 3113 I Columbia St., Plainview, Texas needs som APN-1 conversion data and handbooks—e pecially for 420Mc.

K2SHM needs some data on the Navy RA 7. This was one of the standard shipboard r ceivers, and is selling on the west coast f about twenty bucks. W7VJM needs some c data on the BC-721 made by Galvin . . . a though he writes that any conversion info w be helpful.

W9PAQ picked up a set of RAX receive and an R-189(XA)/ARR-8. That last job, I claims, has a built in panadapter and cove from 70 to 300Mc. Without an instruction boo on either he is lost, but that XA number mea experimental and its book may be hard come by . . . so let us both know about this on Likewise, anybody knowing the whereabou of an ID-60/APA-10 and a GP-7 manual, l George D'Antonio of 42 Mohegan Ave, Po Washington, N. Y. know.

We are currently working on a BC-659 s we can't forward our copy of the handboo (it's borrowed anyway) to W3IAF, but mayb some one else can. This conversion is muc like the BC-1335, but a little easier due to th additional space. W9ALU asked about co verting the Loran indicator ID-6B/APN-4 t a standard scope—any ideas???

Bill Woehr, W9WOP, is looking for th TBS handbook and apparently wants to go a lo further on the conversion than we did. K2MGI came up with a cute transmitter-receiver probably designed for the OSS or some other cloa and dagger outfit. The power supply is an RP-6 the receiver is the RA-6 and the transmitter i the RT-6. Sounds like a good rig with 2 watts in your pocket—almost. There probabl aren't too many of these around, but any hel would be appreciated.

The BC-733D isn't too plentiful, but W9CS has one that he wants to put on the air fo satellite monitoring, and he wants to contac anyone who has done this or who ma have a handbook. K5HWY wants MD-23 ARA-3 manuals, while W1LWV needs th AM-1/ASQ-1 book and data. M/Sgt Willar Smith at the Syracuse Air Force Station, Syracuse, N. Y. has an RT-77/GRC-9 and need handbook help. This is a fine rig and very compact—although very few have appeared on th market as of now. Metro in NY had one fo a while but at about ninety bucks, but almos worth it. K5CEJ is looking for the BC-62 manual while KN5JTP needs the RT-45/ARQ 1 transceiver conversion from anyone who ha worked it out.

73, Ken, W2HD

by THOMAS K. AALUND, K2VBI
Box 13, Roslyn, L. I., New York

overseas echoes

To begin with—an apology is due. As a result of certain personal preoccupations and moving to a new QTH a lot of mail has piled up and quite a few letters to this writer are unanswered at this time. From now on all mail will, however, be handled promptly and there is no more delay to be expected. To make your sentence a little lighter I hasten to add that this slight confusion is somewhat connected with amateur radio—the wedding of Suzy, W2SLA, CQ's assistant editor, to the writer of this column.

An apology is also due to G2PU who accidentally was referred to in the June issue of this column as the "late G2PU." Nothing could be further from the truth, as G2PU is enjoying the best of health and is the director of Labgear, Ltd., Cambridge, Great Britain. He heads an antenna research team.

The *Short Wave Magazine*, June 1958, G, carries an article by G3AST describing principles and operation of a controlled carrier modulation unit. The circuit described is stated to have good quality and results far superior to a lamp tube modulation are claimed.

The same issue also gives design notes on a 160 meter, or—as they call it over there—'top band' vertical antenna. It is interesting to note that the physical height has been compressed to approximately one eighth of a wavelength, giving a total height of 72 feet. While recent cuts and restriction in this country just about kill this band, we hope that this article may still be of some use to some lucky ham who is in a position to make use of this band.

Somebody scooped us—the above issue also carries a very nice picture of JT1AA and his xyl JT1YL, taken in Ulan-Bator, Mongolia. They are seated in their shack and several of the QSL cards on the wall are from this country.

Amateur Radio, May 1958, VK, states that according to the BBC Jules Madey, of Clark, N. J. (call sign is not given) was instrumental in arranging a phone patch between Dr. Vivian Fuchs on the Antarctica (before he left there) and the BBC in London. Antarctic radio conditions being notoriously miserable, no direct contact could be established. Jules got Dr. Fuchs, and simultaneously placed a transatlantic landline call to a BC reporter in London. The phone patch was connected, and there it was—phone patch from the Antarctica to London, via New Jersey. The conversation was recorded and later broadcast by the BBC over their Home & Overseas News Programme. Another 'impossible' taken care of by amateur radio.

The same magazine has been carrying an interesting series of articles on amateur television by VK6EC/T. The May article is the third one in a series and covers a camera control unit. Diagrams are given as well as construction and adjustment notes. Among active television hams in VK the following are mentioned: VK3ABK, 3AUX, 3AAK, 3BU.

Das DL—QTC, April 1958, DL, also carries an article about amateur television, describing the state of the art in Great Britain. The British Amateur Television Club, founded in 1949, is a subsidiary of the R.S.G.B. and publishes a quarterly, the *CQ—TV*. We learn that they are not only carrying out tests in black and white, but also in color. Amateur television information being quite scarce, G3CVO compiled a book, "An Introduction to Amateur Television Transmission." The British Amateur Television Club also makes films about related fields available to its members, at no charge. The article also shows two pictures of a rather elaborate station setup, belonging to G2WJT.

The above magazine also carries an article covering the design for a 70 mc transmitter. While we do not have a band on this frequency, the articles appearing about 70 mc equipment in foreign magazines may still be of interest to many hams. Our line of reasoning is this: What will work on 70 mc can definitely be made to work on 50-54 mc. Looking at it this way these articles gain interest. This writer will be glad to mention articles about 70 mc equipment if the readers feel this is warranted. So please let me know how you feel about it, as there is a lot of activity on the higher bands in Europe and articles appear rather regularly. As a matter of fact—let me know just what types of articles you would like to see covered and if anything in more detail, and this writer will try to do what is possible.

73, Tom, K2VBI

ham clinic

by CHARLES J. SCHAUERS, W6QI

CQ Magazine, 300 West 43rd St., New York 36, N.

The choice of a communications receiver can sometimes be very difficult as attested to by the many letters we receive on this subject. Although one might think that price would normally be the major obstacle, it surprisingly is not, because it is usually given less consideration than many other factors. This perhaps may be due in part to the easy availability of ham gear via the easy-payment route. Of course, price *is* important but if there is quality it does not mean much to the real avid amateur. Proof of this statement is reflected in the thousands of sales of receivers costing over $300.00 manufactured by such fine companies as Collins, Hallicrafters, National, Hammarlund, etc.

So what does the average amateur look for in a receiver?

Well, *all* hams want maximum selectivity and sensitivity. Most want S meters and bandspread tuning as well as rf and af gain controls. Filters—mechanical, crystal and af types are usually wanted by hams who have had the opportunity to own at least two receivers without these devices. The addition of filters to a receiver will help selectivity and partially make up for the lack of multiple tuned circuits.

What seems to worry the average ham most however, is frequency stability. Remember the days when we used regenerative and trf receivers and tuned our sets by "guess and by-gosh"? Today's ham is different—he wants to know *exactly* what frequency he has tuned in. Frequency meters are nice and used by many hams for determining where they are in the spectru but why bother with them if one can obtain receiver with good stability and whose dial c easily be calibrated by the twist of one "lit knob." (To me, this "little knob" is importan

Those who work with SSB lean toward pro uct detectors and effective filters; frequen stability is a *must* with them. On the oth hand, the guy who pushes a bug on CW cat to the single-signal concept and often reso to af filters to bring his signals out of t "soup."

When we are asked what we think of particular receiver we *try* to report frankl taking into consideration not only importa technical features but the desires of the inquir as well. One thing for sure, not everyone easily pleased! What satisfies one will n satisfy all.

Because of the gigantic strides in receiv design made during the past few years, har are becoming more particular and are not sat fied as easily as they once were. A receiver order to command attention cannot get solely on the brightness of its chrome "appoin ments." To be widely accepted it must embo the latest technical developments in circuit and surpass minimum operational requiremen

A receiver, like an automobile does requi periodic service and adjustment. Howeve there are some who will argue that the less o does with a piece of electronic gear, the bett We agree in part but hasten to add that ele tronic gear ages too and *does* need perio care. (We are looking forward to the day wh ham equipment manufacturers will have mob maintenance facilities which will visit vario areas of the country and provide check-u adjustments etc. for a modest fee).

In addition to the letters requesting inform tion on which receiver one should buy for given amount of money, we also receive ma letters requesting information on how to i prove the sensitivity and selectivity of old ceivers. The stock answer which we usua give and which we believe to be of general terest to print here is as follows: "the recei you have contains only one (or no) rf sta Its selectivity when properly aligned is ab 5KCS (more or less) and its sensitivity is in neighborhood of 3 to 5 micovolts per me (uv/m) (more or less). The average go

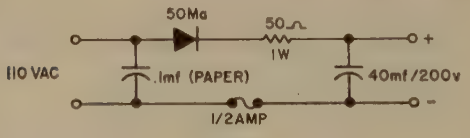


Fig. 1

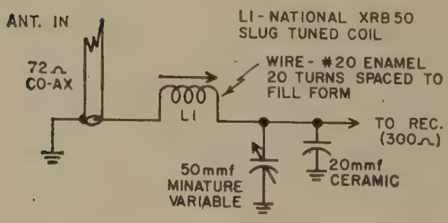

ANT. IN
72Ω CO-AX
L1 - NATIONAL XRB50 SLUG TUNED COIL
WIRE - #20 ENAMEL 20 TURNS SPACED TO FILL FORM
L1
TO REC. (300Ω)
50mmf MINATURE VARIABLE
20mmf CERAMIC

Fig. 2

ommunications receiver has a sensitivity of pproximately 1.5 uv m. or more, has selecvity of 4KCS and less (with filters), conains at least one and often two rf stages, nultiple tuned IF, double conversion for beter image suppression, crystal controlled oscilators, AVC, AFC etc.

"Outside of a pre-selector mounted outboard n your receiver there is little you can do. In ne first place, most of your receiver's chassis pace is occupied by essential parts leaving little oom for additional stages. The addition of a) multiplier *may* help your tuning problems ut does not cure the basic cause of poor selecvity and/or sensitivity—lack of high Q rf nd IF stages. A "floating" or outboard IF tage may help if you are really determined to o something about your receiver's operation.

"You can in some instances utilize new low oise-high gain tubes without too many major ircuit changes; but again, is the effort worth ?" We are inclined to think not. Changing arefully engineered circuits is not an easy task nless one has a lot of patience, proper test nd alignment equipment and above *all*—knowow!

"If you buy a used receiver, make certain hat the set is aligned, tubes checked and that uning mechanisms are in good order. See that ll pots are noiseless and that switches make ositive contact. A set which has been abused ill usually show it."

Observation

The average ham is a pretty versatile person. s soon as the electronic industry comes up ith something for a commercial application, e will usually grab and adapt it to his own se. A case in point are the new 12.6 volt series ubes which were designed and manufactured or car radio receivers which also use tranistors.

These tubes require no additional plate suply voltage from a separate source because they perate with the *low* voltage supplied from the attery of the car which also supplies filament ower.

A number of letters asking for receiver-converter circuits using these tubes have been received. Evidently, many mobileers can see he advantage in doing away with a separate B power supply. However, the changeover is ot as simple as it may seem. First of all, more apacitive-resistor filtering is needed—because f the *common* plate-filament supply. Unless ou have a car generator that is absolutely oiseless you may have a little trouble at the igher frequencies.

Although voltage variation is no large probem, ballast tubes may be needed for extra frequency stability when working in the VHF egions. However, by careful circuit design it s possible to come up with good frequency tability and gain at the higher frequencies.

We intend to try *Tung-Sol's* new 12EZ6 (sharp cut-off pentode) and 12FA6 (pentagrid converter) in some typical ham circuits and we'll let you know how we make out. These tubes replace 3 other types and have up to 50% more gain. Those of you who have tried these tubes for ham applications and have come up with some useable circuits are invited to send us your design for publication in the column.

Questions

More construction articles in *CQ* (bless our Editor!) will necessitate cutting HAM CLINIC wordage to a minimum; we therefore will omit any reference to inquirers, location etc. to save space.

D.C.

"I need about 118 volts DC at 25 mils; what is the easiest way to get it without a transformer?"

See Figure 1. A selenium rectifier in a half-wave circuit will do the trick.

DX100 Modification

"I sometimes get reports that my signal chirps on CW. I understand *Heath* has some circuit change information to modify the DX100. Is this true?"

Yes! W. J. Remer (K8GND) of *Heath* sent me clear modification information which is available to all DX100 owners *from* the Heath Co. for a self-addressed stamped envelope. Ask for the "Improved Keying for the DX100" bulletin. The change is easy to make and *does* help.

Bonding

"What is considered to be an adequate electrical bond in terms of resistance?"

Not more than .001 ohm.

SSB Tuning

"With an *ordinary* radio receiver containing a BFO how do you recommend tuning in a SSB signal?"

Crank up your set's af gain control all the way; reduce your rf gain (if you have one) to a listenable level; switch on the BFO and tune slowly into the signal. Adjust the rf gain control and the BFO pitch control to bring out the signal clearly. If the signal does not clear up, reduce rf gain and retune the set. Always use minimum rf gain and "rock" your BFO control. If you do not have an rf gain control, it is easy to install a pot—usually about 10K in series with an rf tube cathode to ground.)

Lines

"What type of line (balance or unbalanced)

[*Continued on page 107*]

by **FRANK ANZALONE, W1W**
14 Sherwood Road, Stamford, Co

CONTEST CALENDAR

September	6- 7	LABRE CW
September	13-14	LABRE Phone
September	20-21	CQ WAS SSB
September	27-28	MARC VE/W
October	4- 5	VK/ZL Phone
October	11-12	VK/ZL CW
October	11-12	Peruano Phone
October	18-19	Peruano CW
October	25-26	CQ WW DX Phone
November	8- 9	ARRL SS
November	15-16	ARRL SS
November	29-30	CQ WW DX CW

1957 VK/ZL DX Contest Winners

CW

Australia

VK2GW	3920
VK3DQ	8125
VK4NL	1350
VK5KU	1920
VK6RU	4375
VK7UW	2780
VK9XK	4045

New Zealand

ZL1AH	4870
ZL2GS	3570
ZL4GA	4085

No. America

W1BIH	1475
W2EQS	1470
W3VKD	2010
W4LZF	1360
W5VHR	2295
W6TT	2680
W7PQE	2245
W8BHW	2595
W9KXK	640
W0RSL	1850
KL7BPK	515
VE3HB	480
XE1PJ	460

So. America

CE3AG	1200
LU7AS	620
PJ2AE	115
PY1ADA	990
YV5DE	520

Europe

DL1KB	1750
EA3KT	345
EI9F	300
F9DW	285
G5RI	1380
GI3JXS	335
GW3AHN	695
HA5BI	860
HB9MO	800
LA2Q	620
LZ1KRF	170
OE6RP	615
OH4NT	985
OK1NC	940
ON4PA	1210
OZ3FL	1020
PA0TAU	870
SM3AKW	1840
SP3PL	1510
UA3KBA	690
UB5KAB	745

Asia

JA1VX	1910

Africa

CN8FD	280
FA3OA	300
ZS5U	400

Oceania

KH6CMM	230
ZS5AL	855

PHONE

Australia

VK2AOU	1860
VK3HL	825
VK4TH	2325
VK5WP	1410
VK6RU	2790
VK7LZ	1035
VK9BW	305

New Zealand

ZL2ATZ	325

No. America

W2BVN	445
W3VKD	1000
W4KYI	820
K5JLY	500
K6DDO	1100
WOGEK	425
VE7AIH	1530
CO2HB	540

So. America

CX2BH	635

Europe

CT1PQ	310
DL1KB	1595
F9RM	385
G5HZ	675
GW3AHN	405
I1AMU	900
OH2OV	1290
OZ3FL	755
PA0FX	620
SM3BIZ	370
SP8CK	290

Africa

CT3AN	170
VE3AHU/SU	390
ZS5OA	625

Asia

JA1AS	580
VU2RC	230

LABRE

The PY boys start the DX contest seas with their annual party the first two week-en in September. Activities start 0001 GM Saturday and terminate at 2400 GMT Sund

This is a world wide contest and not co fined to the Americas only. Therefore it wou be wise to check the rules and method of sc ing as explained in last month's issue.

Mail your logs to: LABRE Contest Co mission, Caixa Postal 2353, Rio de Janei Brazil.

CQ WAS SSB

The SSB boys are having so much succe with their contests that W3SW and W2SK got together and dreamed up a new one. T one will be a local affair altho foreign statio can participate and try for WAS on SSB in 24 hour period. The rules are quite simple a Bob Adams has covered them thoroughly in h column this month.

This contest covers a 24 hour period sta ing at 1200 EST Saturday, September 20 to 1200 EST Sunday September 21st.

Your logs must reach CQ Headquarters n later than October 20, 1958. Be sure to ma your envelope "SSB Contest."

MARC VE/W

No details on this one as yet but we kno the dates are correct. The object of the conte if it follows the usual pattern, is to see ho many Canadians can be worked by the bo on this side of the border and visa versa. W hope to have the details on scoring and e next month.

VK/ZL

This year the contest is sponsored by t NZART and therefore the rules follow t pattern used in 1956 when it was also und the supervision of the same organization.

The contest extends for a 24 hour peri starting at 1000 GMT Saturday and ending 1000 GMT Sunday.

Logs must show in this order: Date, time GMT, station worked, serial numbers sent a

[*Continued on page 116*]

by **DONALD L. STONER, W6TNS**
P.O. Box 137, Ontario, Calif.

Novice

Example of a Typical QSO

CQ CQ CQ DE KN5GFP KN5GFP KN5GFP
CQ CQ CQ DE KN5GFP KN5GFP KN5GFP
CQ CQ CQ DE KN5GFP KN5GFP KN5GFP K

KN5GFP KN5GFP KN5GFP DE KN4WVQ KN4WVQ KN4WVQ
KN5GFP KN5GFP KN5GFP DE KN4WVQ KN4WVQ KN4WVQ AR

KN4WVQ KN4WVQ KN4WVQ DE KN5GFP R TNX FER CL BT UR RST 599X 599X HR IN NEW ORLEANS LA BT NAME IS JOE BT WATSA? AR KN4WVQ DE KN5GFP K

KN5GFP DE KN4WVQ R JOE ES GE BT UR RST 599X MOBILE ALA BT NAME IS JACK BT RIG IS DX 40 WID 75 WATTS IN BT ANT 80 METER DOUBLET BT RCVR [illegible] BT PSE QSL ADR JACK ROWE BT 392 MAPLE ST BT MOBILE ALA BT SO BK 2U AR KN5GFP DE KN4WVQ K

KN4WVQ DE KN5GFP OK JACK BT RIG HR IS GLOBE SCOUT BT ANT IS LONG WIRE BT RCVR IS HQ 129 X BT SURE WL QSL BT ADR IS JOE EDWARDS BT [illegible] SMYTH ST BT NEW ORLEANS LA BT WX HR CLEAR TEMP 61 WINDY BT SOME QRM BUT UR GETTING THRU OK BT QRS UR ADR AGN BT HW? AR KN4WVQ DE KN5GFP K

KN5GFP DE KN4WVQ R OM BT ADR IS JACK ROWE BT 392 MAPLE ST BT MOBILE ALA BT WX HR CLOUDY TEMP 55 WINDY BT WX CHANGING AFTER RAINY WEEK BT WUD LIKE KNOW FREQ UR XTAL? BT MI XTAL 3722 KC BT WATUSA? AR KN5GFP DE KN4WVQ K

KN4WVQ DE KN5GFP R TNX FER RPT BT MI XTAL 3712 RPT 3712 BT MI DIAL SHOWS UR FREQ 3720 SO CALIB PRETTI GUD BT UR SIGS FADING A LITTLE BT TNX FER QSO BT QRU NW SO 73 ES HOPE CUL VA KN4WVQ DE KN5GFP K

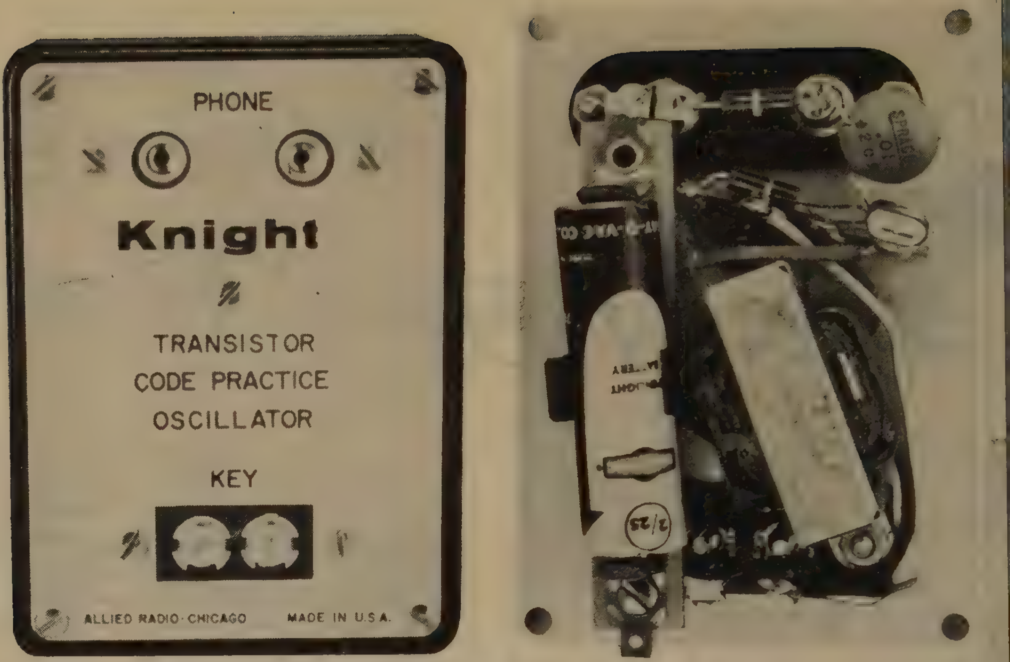
KN5GFP DE KN4WVQ R JOE BT TNX XTAL INFO JUST CKING CALIB MI RCVR WHICH SHOWS UR FREQ 3715 BT FINE QSO OM GN ES 73 VA KN5GFP DE KN4WVQ

KN4WVQ DE KN5GFP R ES GN VA KN4WVQ DE KN5GFP CL

Many observers think that Novice QSO's are sterotyped, that is, they are all the same, and you know just about what the other station is going to say, even before they say it. As an example, when two Novices hook up, the first information is the handle, then an RST report, and the first transmission is concluded with the QTH and a request for a QSL card. The other Novice replies with an identical transmission. When I am working a Novice station, I only write down the handle, my RST, and his QTH. I have heard the other words so many times that it automatically registers like a CQ call. And so, they *are* stereotyped, but for a very good reason.

The Novice is a beginner, and as such, has no end of difficulty copying code particularly through heavy interference. The type of QSO is easier for the beginner to copy for even if he misses a word or two he can guess what they are. But there is no reason for you Novice "ole

Bill, KN9MNS, sent in a letter and picture after his first week of operation. So far he has contacted 14 states on 40 meters with his DX-35 and NC-98. The antenna is a folded dipole about 50 feet high.



The Knight Transistor Code Practice Oscillator mentioned in the text.

timers" (6 months or more—hi) to continue the stereotype QSO. After you have been on the air for a few months, you should develop a QSO "personality." Subjects such as your weather, projects, school, girl friends will make the QSO so much more interesting. If you contact a beginner, you can revert to the handle-RST-QTH type of QSO for that is what he is expecting. But after this basic information has been exchanged, liven up the QSO with interesting comments. You will be doing the other fellow a service (by making him "practice" code) and you will enjoy the contact more. The stereotyped QSO is fine for the beginner but not for you "ole timers." Remember, the FCC examiner isn't going to send you his handle, your RST and his QTH.

Joe de Celis, P. O. Box 208, Gramercy, La. sent in some basic rules (or suggestions) for Novice QSO's, and a typical QSO based on them. I am reproducing them here, along with a few comments of my own, for your information.

1. Listen before transmitting. Search the band for CQ's before originating one of your own. It's rather silly to have a dozen CQ calls all going on at the same time, don't you think?

2. Keep your call short and use the three-by-three system: your call three times, CQ three times, followed by your call three times. This is plenty long enough, but if band conditions are bad, the three-by-three can be repeated two or three times. Don't answer long CQ's, maybe that will discourage them.

3. The letter K, concluding your transmission (sent after your call letters) is an invitation for the other station to transmit.

4. Tune the entire band, and then some. A an example, many DX stations try to conta 40 meter Novice on frequencies between 714 and 7150 kc.

5. AR after the call letters indicates t end of a transmission before a contact is mad AR before the call letters indicates the end the message.

6. R means 100% copy, do not use th symbol unless every group is copied. Who ev heard of saying "RRR OM, but missed you handle"? One contradicts the other.

7. BT is preferred to comma and period e cept in special cases where preciseness needed.

8. VA (sometimes written SK) means en of QSO and should be used in place of A before the call letters. VA is never the la signal sent.

9. When ending a QSO not requiring a r ply, and when you intend to continue to wo the band, end with your call letters, witho K. If you intend to close your station put C after your call letters.

10. The sending speed should be that of t slowest operator in the QSO. Send each chara ter as a recognizable whole, adjusting the spe by the spacing between characters and group

11. Be considerate. Don't hurry the QS Help and encourage whenever you can. Abo all, don't try to "snow" the other fellow wi your c.w. prowess. Except in special cases, bug is entirely out of place in the Novice ha shack.

Although it should really be in the transist column, I knew you would be interested in t Knight Transistor Code Practice Oscillator.

s a very simple kit, and an interesting project you would like to learn more about transistors and associated circuitry. The code practice oscillator needs only a key and headphone to operate. It is completely portable because it obtains its operating power from a self contained battery. The use of a transistor assures extremely long battery life. This unit will operate for approximately 30 weeks continuously on a single cell. The oscillator generates a very pleasing tone, about 400-600 cycles depending on the type of headphones used. The transistor is very inexpensive (99 cents) should replacement ever be required. The CK 722 used in this unit is very durable and will probably last longer than you will. The code practice oscillator is contained in a black plastic case measuring 4 X 2⅝ X 1⅝ inches and has an attractive screened and anodized aluminum front panel. The kit, including all parts, battery, wire, and solder, sells for $3.95. The key and phones are extra, of course.

Who's DX?

Just received a card from Wolfgang Hummel, Neuhassen Filder, Eblinger Str. 18, Stuttgart, Germany. Wolfgang's call is DJ3VW and he advises the Novices: "I will give you the opportunity to work a DJ station on 21 mc cw. I will standby for all Novices from stateside and will QSL 100%. I am QRV (operating) from Monday thru Friday at 20 hours GMT. Very best DX, gud luck es 73, Wolf" There's your chance to work a new country, go to it fellows.

Our old friend Bud Lafferty, (KG1CK) up in Thule, Greenland sends us his monthly list of stations heard at his QTH. Bud also requests that the fellows not write for schedules. Band conditions, foreign station QRM, plus Bud's duties make it very difficult to meet schedules. Best time to hear him is between 2100 and 2400 E. S. T. so give a listen, with the signal he puts in, you won't have any trouble making connections. May 8, 1958 21.115- 21.160 mc., 2100- 2330 E. S. T. KN4PWY, UAC, KN6CMF, KN7AUE, BFI, CNT, KN9LJW, KN0LCR, PCJ, PGM. May 2, 7150- 7200, 2100- 2130 E. S. T.: KN2LYK, PZF, RGY, WN2PEC, KN3DVU, KN4PMY, QYA, KN5OLE KN8GGT, HBH, IAD, IOJ, JX, JMC, JUH, JVH, KN9JTZ, IQP, KN0-PFX. Novice stations contacted by KG1CK, 21.12- 21.15 mc between April 15 and May 12: KN1CNZ, DXA, EJB, KN2DLY, OHC, WN2PUC, KN3AKV, ALS, BTS, KN4RID, SFO, SSM, KN5KKN, KN8GTB, HFB, IFL, KN0JPJ, LKP. May 15, 2330- 2400 E.S.T. 7150- 7200: KN2EJU, WN2PUC, KN3CEM, DEH, DKP, KN4TRV, KN5MIK, PGC, KN6HVF, KN8GHV, JJE, JJX, JPB, JXV, KN9KBQ, KZB, LGL, LNR, MOY, KN0-MUX, PDE, May 17, 0200 E.S.T. 7150- 7200 the following QSO's were heard: KH6AHZ and KN7DEO, KN7CHG and WN6TEW, KN0-OWA and KN8JIW, and KN0PDS and KN5PVT. May 18, 0200 EST, 7150- 7200: KN2CFE, KN4TSB, KN8HAU, KN9JHG, LGL, KN0MMF, MZX, PDL, PHS, PMB. May 18, 1345 EST, 21.1- 21.15 mc: KN1CNZ, GHM, KN3CWB, KN8KBH, KN9KQO, KN-0OER, LNL, MZF. Bud continues his letter with some interesting information. He says "KN0LNL has had the strongest signal I have heard on 15, a conservative 599 (whatcha running, OM?). KN4RID has the best operating technique and is a pleasure to work. I wouldn't be a bit surprised if he is the first to get Novice DXCC (He did!). The most often heard stations are KN4SFO, KN4SSM, KN4RID, and KN8-HFB. They are very active, apparently. The East Coast comes in here the best in the late afternoon and the West Coast about 2100-2400 EST on 15 meters. It is next to impossible to work a KN6. To me, they are rarer than an FB8!"

Bud also passes along some tips for the Novices. He continues "Some of the Novice stations are DX to us and unless their cards are accurate, including the N, they are useless for confirmation. Several CQ calls are much more effective than a four minute call. It is not necessary to give the address over the air. It takes up too much operating time and it is much too expensive for a DX station to QSL direct. They will arrive through the bureau. Also, when Novice stations call CQ-DX some stations take them at their word. I have heard some fine DX, even by General Class standards, passed up by a Novice in preference to an S9 signal a few states away. G3 stations are very strong here. 21.12 and 21.15 mc are real rough here, and the Novices seem to pick the spots with the most activity. Best regards from Greenland, Bud, KG1CK." Many thanks for your fine report and interesting letter. We'll see you next month.

Net News

Howard Nichols, KN2LBK, East Mountain Road, South, Cold Spring, N. Y. would like to know if there are any nets in his area. If not, he would like to start a net, particularly for Naval Reservists.

Help Wanted

The following persons or clubs can be counted on to help prospective Novices in their area:

The Sharon Amateur Radio Association of Sharon, Mass. is conducting code and theory classes. The theory classes are bi-weekly and are under the supervision of K1CNX, Bernie Rosenberg. The code classes are weekly and bi-weekly and are under the direction of Phil Carter, W1CRA. Anyone seriously interested

[*Continued on page 101*]

YL

by **LOUISA B. SANDO, W5R**
212 Sombrio Drive, Santa Fe, N.

Last Call!

Soon after you will be reading this, the 10th National Amateur Radio Convention will get under way at the Sheraton-Park Hotel in Washington, D. C. Dates are August 15, 16, 17, and it promises to be a big occasion for OM, YL and XYL alike.

Headquarters for the ladies will be the Caribar Room, where there will be continuous tea and coffee service. The nursery will be open from 9 a.m. to 10 p.m. There will be many tours to interesting spots in and around Washington. On Saturday there will be a ladies luncheon with fashion show, prizes and SWOOP initiation, and a YLRL session in the afternoon. On Sunday the highlight will be a boat trip to Mount Vernon.

K6ENK, Wanda Gluck, editor of YL Harmonics for the remainder of 1958.

Members of GAYLARK—Gulf Area Young Ladies Radio Klub—pictured early in '58. L. to r., seated: K5MIZ, sec-treas; K5BJU, president; W5ERH, historian; W5CXM. Standing: K5ALF, KN5POD, K0MET, K5LIU, W5EGD, vice president; K5PFF. For other members, see text. Note the "Gaylark" on table in foreground.

One special feature of the convention w be stations set up at every department of t convention so that one can call for peop wherever they may be—even if they are off a tour, for there will be two mobile units wi each tour. Ladies program chairman, W3C Tex, also has set up a Hobby Show for e hibits of handicraft—weaving, sewing, pai ing, ceramics, etc. Bring your prize exhib and meet other gals with similar interests.

And, in case you haven't already hea about it, top prize for the ladies will be mink scarf!

YLRL

W7NJS, Beth, president of YLRL, has a pointed K6ENK, Wanda Gluck, to be edit of *YL Harmonics* for the remainder of t year. Wanda, who is president of the Camel Capital Chirps, will do the editing and printin with help from other members of the 3C's assembling and addressing the magazines.

Latest count of YLRL membership tot *nearly 800 YLs!* The membership campai

Oregon State Convention held at Solem on May 3-4 1958 drew a registration of between seven and eight
ndred, over 50 of whom were licensed YLs 30 of the 41 attending the licensed YLs luncheon gathered for
s photo L to r, front row W7's DHK, WFO, KN7BII, W7's HGS, SPA, SBS, WTK, DIF, CPV, K6OBL, W7QXH.
nter row W7's GWG FVF, NJS, HHH ex-W9BEY, W7's VLG, RIC, IGY, HPT, EIU. Back row: W7's HNH, RAX,
7BED, W7's FKG, DAT DIC GLK N7CBF W7GNC. Other YLs attending: K7's AJB, BCZ; KN7's AZC, BFD, BHU,
O, DPA, W7's CCF, CSQ, DVH, ENU, FKS, FWT, ITZ, NOK, NTT, QGF, RVM, SJW, SYF, YUZ, ZLS: K6's MHU,
QJQ, UVD. Photo courtesy W7NJS.

stigated by YLRL president W7NJS is bear-
g fruit. But even 800 is not a large proportion
the total number of licensed YLs—YLRL
ll wants and needs new members. Member-
ip entitles one to issues of the bi-monthly
agazine *YL Harmonics*, to use the YLRL
ationary, QSLs and pins. YLRL also sponsors
ts and contests and, though any YL is in-
ted to join these, still YLRL needs the sup-
rt of all the YLs to carry on these projects.

Eastern membership chairman is W8OTK,
ice Geib, RFD 1, Van Buren, Ohio. Western
embership chairman is K6BUS, Madge Rom-
ell, 8508 Trask Ave., Playa del Rey, Calif.
hese girls have lists of non-member YLs.
Ls or clubs are requested to write the M C
earest them requesting a list of names and
escriptive literature to be sent to prospective
embers. At the end of the year there will be
izes for the three bringing in the most new
embers.

GAYLARK Certificate

The GAYLARKs have a new V. P.—
5EGD, Lillian. This newest of the YL clubs
an enthusiastic group. They plan an all-YL
erator Field Day set-up running six rigs
vering all bands using cw, am and ssb.

The GAYLARKs also have drawn up these
les for earning their club certificate:

1. The GAYLARK certificate is available to anyone who sends log sheet data (no QSLs) on QSOs with six (6) members of GAYLARK.
2. Send above data with 10¢ to certificate custodian, W5CXM, Phyllis Riblet, 8902 Ilona Lane, Houston 25, Tex.
3. Contacts with any of the members since date of organization of Klub, Jan. 28, 1958, are valid.
4. Current membership: K5's BJU, MIZ, PFF, CZZ, ALF, LIU, HTO: W5's EGD, ERH, MBB, EUG, CXM, DRA; K0MET, KN5POD, Rhea Hurrle and Zola Parker (awaiting Novice calls).

Elected at their April meeting and to be installed in June are these new officers of the Chicago YLRL, Inc.—president, K9JVL, Lillian; V. P., K9CMZ, Charlene; sec-treas, K9GUB, Peggy.

"CQ YL"

Do you have your copy yet? We'll bet you are hearing about "CQ YL" over the air! The first and only book recording the part YLs have played in Ham radio, it contains 18 chapters, 165 pages, 500 photographs—covering every phase of YL Ham radio from 1913 to 1958.

In the nine pages of Chapter 14, "DX, VHF, Field Day," for instance, is recorded the major participation by YLs in these facets of amateur radio. All of the YLs who hold DXCC and WAZ are listed, together with pictures and write-ups on most of them. The VHF section likewise includes those YLs active in this work, while Field Day features the YL clubs that have made an all-YL operator F. D. entry.

Copies will be mailed immediately. Order yours from this column editor, Louisa Sando, W5RZJ, 212 Sombrio Dr., Santa Fe, N. Mex.—$3.50, postpaid. Please indicate if you wish to have it autographed.

33—W5RZJ

by **BOB ADAMS, W3S**
919 McCeney Road, Silver Springs, M

sideband sideband sideband

SIDEBAND

Harry ZS2HX, Syd, ZL31A and Mick, ZLPJ.

EVA, CN8MM HAS DONE IT AGAI

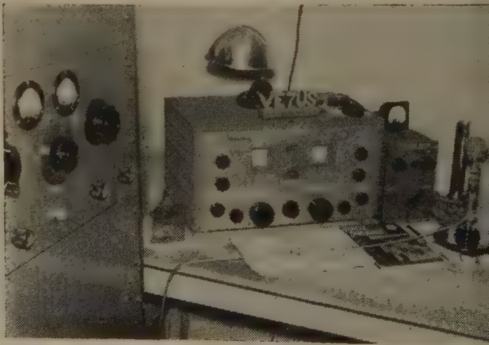
For the second time in a row Eva is
winner of CQ's World-Wide SSB DX Conte
Using three Telrex beams on 10, 15 and
meters, with a 32V3 running 150 w
CN8MM totaled 243,110 points. 547 conta
with 95 countries, in a total of 56 zones w
made in the twenty-four hour period of
Contest. Congratulations!

Peter, HB91E ran a very close second, w
Charlie, F7AF third. The official standing w
the first twenty-five stations follows:

CN8MM	243,110	VK3AEE	49,3
HB9IE	202,752	VK6RU	48,8
F7AF	181,480	DL4WX	46,5
OD5BZ	171,974	W4TO	46,0
TI2HP	128,949	KZ5WZ	45,3
ZS6KD	108,100	W6ONP	44,6
ON4DM	100,674	SM6SA	44,9
TG9AD	63,956	W4JUR	43,3
W9EWC	59,249	W1HKK	39,6
W3SW	58,456	VE3MR	36,8
KG4AQ	52,002	KL7PIV	31,2
PY4TK	50,520	ZL3PJ	30,6
	YV5ABD	24,888	

Another "W3SW Award," a silver cup
been sent to CN8MM. and certificates a
being forwarded to the others.

"Worked 100 Countries" awards we
mailed this month to Reg, W6ITH who se
in 127 cards to be checked, Bob, W8QNF, a
to Cliff, W8GCN, Humberto, TI2HP, Te
W6UOU forwarded 11 more cards to be
corded making a total of 119 countries co



VE7US.

med. Wish he would give us his secret method obtaining QSLs.

Bob, W4RQR with his flying associates op- ated from VP5BH on May 31 and just beat e deadline as Cayman after June 1, 1958 ounts with Jamaica. That is Bob's last trip r some time as he has been transferred to e Washington area. His new QTH will be: t. Col. R. H. Mitchell, USMC, 5804 Accomac reet, Springfield, Va. for those still needing ards.

Helen, K0BFS very kindly forwarded the hoto shown of Harry, ZS2HX. Helen has orked over fifty countries on SSB, but most her operating time is spent working her OM ho is stationed in Thule, Greenland.

From W1LF, VE7US we learn that the fol- wing VE7 stations are active on SSB in ritish Columbia, mostly on 75: AKN, ACF, LW, FX, MT, AM, QJ, BK, US, DH, AMJ, L and BG. W1LF has worked over 500 other ations, all on 75 meters. He will soon be obile on SSB.

Edgar, W1BDF who gave VP4TE a SSB xciter, watched Jim, W5ZO operate 15 from e S.S. United States using a KWM-1 while n a trip to England the last week of May.

Cliff, W8GCN is handling all QSL's for S3F and ZS6AJ ZS8. To obtain your card nd Cliff a stamped-self addressed envelope ith the card enclosed for the above stations.

HL9KR in Pusan Korea is a club station nd is active on twenty meters with a KWS-1. hey transmit only on 14130 which is the fre- uency assigned to them by the government. nd listen on or around 14.265 for SSB calls. est operating times are from 1100 to 1200 MT for contacts on the East Coast. W6IAL handling QSL's for HL9KR.

Due to the poor response from those wanting A2CA and EA2CQ QSL cards, I have sent e balance of over 900 cards to the various SL Bureaus.

Joe, W4IMP advises that QSL's for C2AGI should be sent to 1317 North Sixth treet, Nevada, Iowa.

Danny Weil, VP2VG is sailing his new ASME II, to the Virgin Islands and is ex- ected to arrive around June 10th. He will

Continued on page 104

Jose, PY2BS1

Martin, VE3MR, Antennas

Volt, DU7SV

by BYRON H. KRETZMAN, W2JT
16 Ridge Drive, High Hills, Huntington Station, N

RTTY

Testing in an RTTY station requires something just a little bit more than hitting the green keys and seeing if it prints someplace. The pulse make-up of a character in the teleprinter code has been covered before; in fine detail, starting on page 14 of the *RTTY Handbook*. As you can see by looking at a printed copy of the code, no character is sufficiently reversing in pulse character to be able to be used as a really good test signal. We therefore need a square-wave signal or a "dot" generator with a repetition rate of about 22.5 cycles per second. An oscilloscope or a meter-type bias distortion set, such as the I-97A as modified by W6CQK (pg 6, *RTTY*, Dec. '57), then permits us to follow the test pulses through an afsk or fsk oscillator, a converter, and through the local loop right to the selector magnets c our printers.

W2JTP Visits Typical California RTTY Kilowatt.

Prolific Phil, W2JAV, has come up wit another "little" gadget to answer our testin needs, this time a transistorized Zero Bias c Distortion Generator. This very useful piec of test equipment is not just a "dot" generatc with equal *mark* and *space*, but up to 50 marking or spacing bias, continuously variabl can be inserted at will. Unfortunately we don have a picture, but *Fig. 1*, the schematic dia gram, will give you some idea of how littl there is to the device.

The unit consists of a 22.5 cps transistorize phase shift oscillator utilizing a 2N109. Ar other 2N109 is used as an amplifier to driv the 2N270 d-c amplifier which operates th *Western Electric* 255A polar relay. Both con tacts are available, through a switch, for balance check or reversed keying needs. Powe is supplied by a self-contained 14-volt dr battery. All the capacitors used are of th miniature tantalytic-type. A FREQ. ADJ. po is used to set the unit to 22.5 cps, and a BIA ADJ. pot can be calibrated in terms of % bia if a W6CQK bias meter is available.

If a 'scope is connected across the contac and ground while keying the bias meter, th wave form and contact bounce or chatter readily observed, thus a polar relay can adjusted in the unit for zero bias and conta condition can be checked. With its self-co tained power supply, this portable and e

Bruce Rowlings ZL1WB. ddresses a Dinner Meeting of NCARTS held in Milbrae, California, May 23rd. Only part of the audience of 25 RTTYers and 12 XYL's is shown. There were plenty of prizes, including a special ladies prize. Bruce gave a most interesting account of his 9 months tour of the United States. By now, ZL1WB should be back on RTTY from "down under."

remely stable keying source can be used to check an RTTY station from stem to stern. A eal enlightening experience can be had by aving someone actually key a transmitter on he air with it and then observing the bias on a neter at the receiving end of a long radio circuit

By the way, if you have any questions about his little gadget. Phil asks that you write to Byron, W2JTP.

Good Grief Dept.

Back in the Feb. '58 issue, page 80, there were two omissions in *Fig. 1*, the schematic of the W2JAV Tone Generator. A 0.1 ufd capacitor should be inserted in the lead going from the emitter of the 2N109 oscillator to the common lead on the bank of tuning capacitors, at the bottom of the .008 capacitor. Secondly, there should be a connection between the bottom ends of the 2.2k and the 27k resistors.

In the June '58 issue, page 74, the notes that were supposed to go with the diagram of the transistorized TU fell under Suzy's desk when Tom, K2VBI, came in, so here they are:

1—Tune the 88-mhy toroids; capacitor values are approximate.
2—Adjust the 100k pot for equal voltage swing from the diodes with the 2N146 removed.
3—Select battery voltage tap going to jack for the desired printer magnet current.
4—All diodes are of the 1N69 type.

Not exactly "grief," but it could be: In Phil's Improved Converter in the April '58 *CQ;* if neon lamp *I-4* will not extinguish (with no signal in), increase the plate resistor of *V-4A* to 1.5 Megohm. Some tubes were found that wouldn't cut-off with the 3.3 Megohm grid resistor.

Also, many fellows have asked for the d-c resistance of the FL-8 Range Filter *37M* coil that is used in the RTTY Notch Filter that was described in the Dec. '57 RTTY column. Apparently some are not marked. Anyway, it should measure about 250-ohms with an ohmmeter.

Off the Floor

Actually, with apology to Merrill W6AEE, it's page copy off the floor, mostly from W6VPC and W0BP. (*Oh, no. Not again? Ed.*)

Ole' two-finger BeeP is boasting again. Not satisfied with the first WAS on RTTY, he sends copy of W0BP working Eric, VK3KF in Melbourne, Australia—neglecting to mention that Bud W6CG worked him for the *first* RTTY contact with the U.S.A. the night before! Eric has a Model 15 and was running 100 watts to a three-element beam on 21,083 kc. Also worked was Mary K6OWQ, Carl W8GIG, and Geri KL7ALZ at Bunny Gulch, Alaska.

BeeP also neglects to mention that it was Bob W3TCQ in Seaford, Delaware, that made his 48th State. It was Bob's *first* RTTY contact, and it was on 3650 kc. Bob wishes to acknowledge the help of A3FU of Salisbury, Maryland, whose help made BeeP's 48th State contact possible.

VE8FO says that he is the only active VE8 left, and admits working WØBP. Remember, Canadians can't work the high end of 20. Look for them around 14,100 kc. Jim would like to see calling and working frequencies established for both 15 and 20. Any comments?

George, KH6EM, on Maui in the Hawaiian Islands is on 15 and 20 now with a KWS-1 and a 75A4 having a ball working all across the country. (*Hey George, they have a 2-meter net in the Islands, too!*)

W2ORX reports W2NRQ, W2ICA, W2IGX, K2DOH, W2WKL, W2IHD, and K2VAM active RTTYers of the Livingston (N.J.) Radio Club. W2JTP is still on 2-meter (147.96 Mc) autostart every hour on the hour from 6 pm until 11 pm EDT.

W4DPH is in the PBX, *Teletype*, department of the *Southern Bell Telephone Company*. W4IYP is building a W4EHU converter. K4PAE would like to know if any other 17yr-olds are RTTYers. W4EHU is dreaming up a heterodyne VFO which will use his receiver local oscillator for tracking. K4KKZ has a Canadian *RCA* i-f "Receiver Adaptor FS/#C1" and is looking for information, either the manual or a schematic. W4FH has a Model 26 and has modified his 75A1 by adding an 85kc i-f amplifier. (*See the 85kc i-f converter on page 48 of the RTTY Handbook, Bob.*) K4AAR would like to trade a Model 26 and an a-f converter for a 10-B *Central Electronics* exciter.

W6NBE/7 is using FL-5 range filter coils for his converter. (*See page 59 of the RTTY Handbook for W2JAV's famous "Little Nemo."*) W6CQK now has up a vertical antenna at his remote transmitter. W6UUX is now Chief Engineer of the Far East Network on Kyushu, Japan, and will soon be on RTTY with the call KA7AX.

K8HQF/9 wants to know where he can get standard pallets to replace the fractions on h Model 26. (*Try W2ZKV or W9GRW, OM.*) K8DDC (Box 251, Chillicothe, Ohio) has som *Sigma* 7JOZ-16OT and some *WE* polar relay for sale. W8LGL has an AN/FRR-3 and looking for an AN/FGC-1 to go with i W8AYT has a Model 15 and is about to op erate on his 32V3 for fsk.

WØIRV has a *Drake* receiver and wants t know if the W2JTP i-f converter (pg 61, *C* May '58) can be used. (*No, Doc; the BF can't be turned off. Suggest trying Phil's a-f T in the April '58 issue.*)

Comments

As you all know, the ARRL Board of Direc tors instructed General Manager Budlong t investigate the feasibility of eliminating th FCC-required dual identification by A-1 or A- when using other modes. (See page 64A c June *QST*)

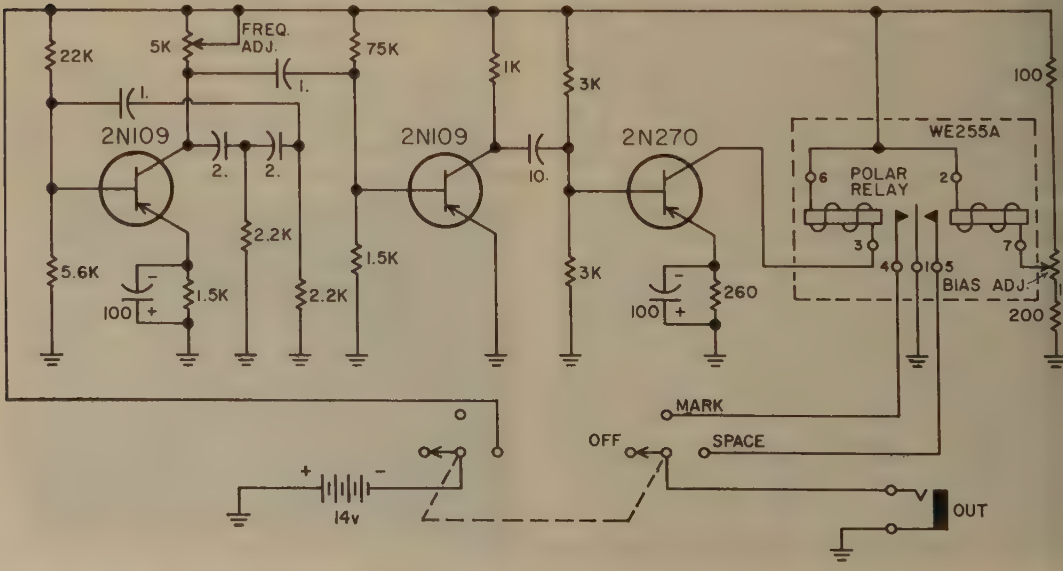
Dual identification long has been a thorn i the sides of RTTY operators. Besides being handicap to RTTY operation, we believe it so unnecessary in the light of the precis standards stipulated in Part 12.107 of the FC Regulations and the availability to the FCC c ordinary machines using these common stan ards. Sure, we can still see that dual identific tion is necessary where "odd-ball" amateur TV facsimile, and pulse emissions might be use but an FCC monitor can easily identify a amateur RTTY station without listening fo some other mode.

This is an important issue to all amateu RTTYers. Send General Manager Budlong care of ARRL, West Hartford, Connecticut, card and let him know how you feel about this

Let's drop dual identification for RTTY!

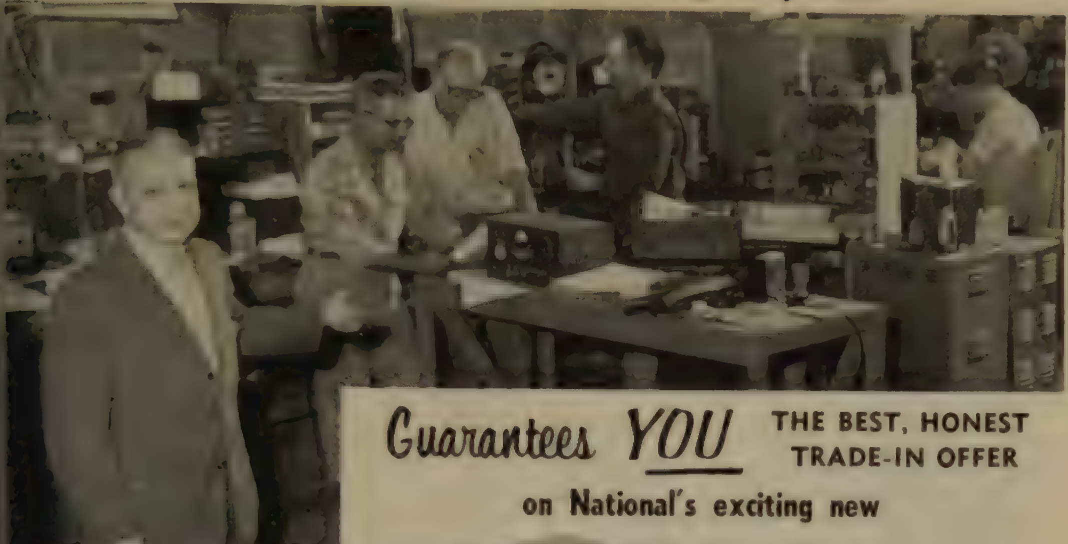
73, Byron, W2JTP

Zero Bias or Distortion Generator.



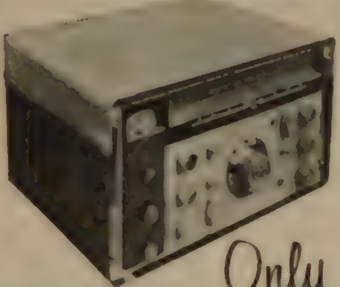
Leo Says:

World Radio's Reconditioning Department



Guarantees *YOU* THE BEST, HONEST TRADE-IN OFFER

on National's exciting new



NC-300

DREAM RECEIVER

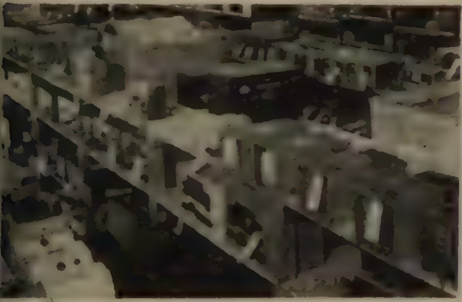
Leo I. Meyerson, W0GFQ, says, "Here's a part of our reconditioning department where five trained technicians are continually repairing and perfecting used equipment. As many as 500 new items go through here each month. But we need more. Over the years we have built such a tremendous market for used equipment, that sometimes we even have a waiting list for certain items. Because of this guaranteed market, we can offer you a better price on your trade-ins. We want them! We need them! We'll allow more for them! Let us give you our top quotation for your present gear when you buy your new NC-300."

Amateur Net: $399.00

Only $22.95 per mo.

your present equipment may be enough for down payment.

Stable! Sensitive! Features 10 dial scales for coverage of 160 to 1¼ meters with National's exclusive new converter provision with receiver scales calibrated for 6, 2 and ¼M, using a special 30-35 tunable IF band. Longest slide rule dial ever; more than 1 ft. Three position IF selector - .5kc, 3.5kc, 8kc - provides super selectivity. Separate linear detector for single sideband. Calibration reset adjustable from front panel to provide exact frequency setting. Dual conversion.



XCU 300 Plug-In Crystal Calibrater: $23.95

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$15.00 VALUE

Gives 2400-hour time every hour of the day in every time zone all over the world. Key cities shown clearly. Direct reading, no computing or calculation necessary. Order your NC-300 now while this offer lasts. Clock will be mailed to you and guaranteed by clock manufacturer.

Dear Leo: Please send your free 1958 Catalog, information on the National line, and quote your best trade offer on my present

____

for a new NC-300.

NAME: ________________________________

ADDRESS: ________________________________

CITY & STATE: ________________________________

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For further information, check number 54 on page 126.

11 METER CONTEST RESULTS

Wheew . . . What a contest . . . January proved a good month for radio condx. Ole man propagation didn't let us down.

From past performances it seems to me that we ought to make this an annual event. Let's mark our calendars accordingly and set aside the weekend of Jan. 10 & 11th for the second annual 11 meter gettogether.

There seemed to be some doubts about the status of Canada. It counted as a country no matter how many provinces you worked. Some of you counted the provinces and will find your scores much lower than you calculated.

Please, in the next one take time out to figure your score. With the great number of logs handled it was quite a task to sit down and also figure out his or hers score. Quite a few were guilty in this dept.

The state of California seemed to have the most 11 meter hams and it was a real battle between K6DI and W6RCD with 6RCD coming out on top by a scant 1200 points. W6RCD is the phone high for the world. Our heartiest congratulations on a fine job. Your silver cup and certificate will be arriving shortly.

Our CW brethren are not to be left out. They came through very nicely. It took an old contest man like W2EQS to show them how its done. Charlie rolled up 7,266 points on 173 Qso's and 42 multipliers. He's our world high leader and winner of a silver cup.

In our next contest let's set aside 26.960 to 27,000 as strictly CW, This will give them a spot free of phone QRM to operate.

So lets work on those eleven meter antennas this summer and get the bugs out of the rigs in readiness for our second contest in January. See you on 11.

TOP FIVE PHONE — CW

PHONE		CW	
W6RCD	-385 x 54 — 20,790	W2EQS	-173 x 42 — 7266
KP4AEB	-378 x 53 — 20,034	K6LVT	-157 x 41 — 6437
K6DI	-384 x 51 — 19,584	W8AJW	-126 x 36 — 4536
W2VCZ	-364 x 53 — 19,292	W1BFT	-112 x 39 — 4368
W7QNC	-341 x 51 — 17,390	W6ETJ	-117 x 37 — 4339

UNITED STATES — PHONE

Alabama
K4EHJ — 5,032
W4DS — 2,673
K4ANB — 406

Arizona
W7QNC —17,391
W7ZVP — 8,400
W7ENA — 4,879
W7PZ — 1 624
W7AKX — 578

California
W6RCD —20,790
K6d —19,584
K6OPI —17,340
W6DYV —13,959
W6IHK —11,616
W6NJM —10,608
K6SXA —10,057
W6LZB — 9,675
K6UKX — 7,682
K6GIJ — 7,181
W6SEU — 5 738
W6DX — 5,474
W6SCR — 4,935
W6VW — 1,971
W6OES — 1,377
W6SRT — 1,118
K6EXV — 684
K6HV — 168
W6CXO — 160
K6EKC — 154
K6IGS — 84

Colorado
W0CDP — 6,308
W0HQT — 2,697
W0FWH —1,960

Connecticut
K1ACC — 612

Dist. of Col.
W3CMX — 392
W3III — 320

Florida
K4RWX —13,348
K4OXZ —12,643
K4KUZ 12,190
W4BIL — 4,964
K4CEF — 1,584

Idaho
W7ITN — 840

Illinois
W9UNG — 6811
W9BIQ — 5,504
K9AKS — 3,750
W9ZUL — 3,300
K9BGZ — 2,112
W9KIK — 1,650
W9JMY — 615
W9VKS — 504

Indiana
W9MFM — 1,709
W9UCT — 954
W9ZHD — 672

Iowa
W0SQN — 9,516
W0DUA — 4,371
K0AIC — 1,407
KOLCI — 640
WOQVZ — 585
KODYJ — 290
K0EJV — 200
KODQI — 154

Kansas
W0OFR — 7,194
W0IFR — 5,586
KOAYS — 5,408
W0VFE — 5,190
WOSKF — 3,780

Kentucky
W4KKG — 5,320
W4KZF — 2,250
W4ZPX — 1,601
W4JBQ — 1,026

Louisiana
K5BLC — 4,650
W5LDH — 2,112
W5ULN — 1,056
W5JET — 720

Maine
K1AKO — 5,915
W1GKJ — 5,640
W1ZUA — 220

Maryland
W3IBX — 2,975
W3JO — 1,134
W3MSR — 688

Mass.
W1IUU —11,340
W1MGP — 8,920
W1EKO — 7,942
W1BSO — 5,670
W1TQQ — 5,145
W1QWI — 4,625
W1BTL — 4,242
W1AQE — 4,104
W1DXS — 1,564
W1PLJ — 990
W1PO — 465
W1DDO — 408

Michigan
W8DGP —10,912
K8CFU — 6,000
W8JXU — 2,425
W8CFA — 24

Minnesota
K0ISJ — 5,181
KOEKR — 3,060
W0HGW— 2,746
W0QDP — 2,400

Mississippi
W5PGG — 1,992

Missouri
W0TFQ — 8,028
KODXM — 7,520
W0FNN —6,014
K0GJD — 3,220
W0LFE — 2,754
WOQWS — 2,300
K0HQX — 945

Montana
W7DXM —13,860
W7JHL — 7,917
W7SFK — 1,334
W7YUB — 104

Nebraska
W0UI0 — 828

Nevada
W7ZCA — 4,940

New Hamp.
W1BFT — 6,720
W1GET — 6,160
W1MTY — 1,050
W1JWU — 308

New Jersey
W2VCZ —19,292
K2KJI —10,800
W2LYO — 5,256
W2EAQ — 3,255
K2PQS — 2,912
W2JON — 1,500
K2AIM — 1,302
W2CJU — 966
W2DEN — 594
W2BVE — 160
K2GBN — 6
W2CVW — 1

New York
K2TCD — 4,068
K2DBB — 2,185
W2NNB — 1,408
W2QNI — 1,380
W2EEJ — 1,140
W2MTA — 836
K2UNY — 528
K2YPR — 490
K2KND — 230
W2HSG — 54

N. Carolina
K4KZZ — 1,560
W3MDI/4
— 1,265
W4EFY — 840
K4JQV — 126

N. Dakota
W0WVJ — 4,340

Ohio
W8OYL — 6,240
W8ZZC — 4,743
W8KGA — 4,480
W8AJW — 3,094
W8ANO — 2,992
W8ZXR — 1,820
W8KC — 1,776
W8IBX — 1,720
K8BDZ — 1,035
W8TIZ — 720
W8FEM — 640
W8LOF — 450
W8OMY — 221
W8TCO — 4

Oregon
W7BBH —15,043
W7JRI — 7,448
W7VOK — 7,360

Pennsylvania
W3SHT — 4,752
W3NHO — 4,260
W3KBS — 1,206
W3VKD — 1,122
W3IHS — 648
W3ARK — 455
W3CGS — 210
W3KZW — 25
W3VJP — 8

R. Island
W1ZJQ — 6,825
W1WKO — 1,950

Tennessee
K4EQM — 5,616
W4WBK — 935
K4BOM — 611

Texas
K5AUZ —11,240
W5AUT — 9,435
W5PYI — 8,568
W5RT — 8,541
W5TNG — 6,660
K5HWY — 6,516
W5GSE — 4,480
W1PVF/5
— 3,003
K5EVY — 3,000
K5AWV/5
— 2,442
K5JCC — 1,360
K5MRQ — 1,250
K4JWH/5
— 1,200
K5IHD — 1,050

Virginia
K4OMR — 2,160
W4JSR — 1,909
K4LEA — 384
K4MKO — 30

Washington
W7SYE — 6,675
W7SRX — 6,216
W7WMY — 3,564
W7EMY — 16

W. Virginia
W8UMR — 2,268

Wisconsin
W9WWJ — 3,910
W9BQM — 1,650

Wyoming
W7UFB — 8,946

Canada
VE4OB —10,340
VE7AQQ — 9,212
VE4SX — 5,285
VE4EO — 4,879
VE5BI — 3,720
VE6OH — 3,333
VE3BIF — 378
VE3IR — 234

Alaska
KL7JDO — 5,040
KL7RZ — 3,145

Canal Zone
KZ5PE — 7,749

Costa Rica
TI2CAH — 216

[*Continued on page 119*]

HARVEY stocks the New Cesco Reflectometers

Now! with new dual scale all clear meter calibrated in SWR and relative power.

A quality instrument employing mutual inductance and capacity coupling between linear conductors for continuous measurement of standing waves on transmission lines. Suitable for frequency range from 3 to 200 megacycles. For continuous line insertion at power from 25 to 1000 watts. Will work satisfactorily on power input of 10 watts at 7 mcs. and up. Will work on 5 watts output 100 mcs and up. Line insertion power loss less than 1 DB at 30 mcs.

FEATURES:

- Uses sensitive 0-100 microamp meter calibrated in SWR
- Has relative power scale
- For continuous transmission line insertion
- Power to 1000 watts and over
- Prevents false loading from antenna tuner, match box, PI network etc.
- SWR observed immediately at all times without adjustment of Reflectometer
- Power output indicator
- Makes possible increased radiated power by reduction of line reflection
- Simplifies adjustment of antenna match
- No balancing adjustments, no reversing
- Each unit accurately hand calibrated and perfectly balanced
- Frequency tested from 3 to 200 mcs.

MODEL CM-52
For 52 ohm coaxial cable

MODEL CM-75
For 75 ohm coaxial cable

Contains phasing unit, loading control and reversing toggle switch, equipped with SO-239 at each end for inserting into feedline. Ideal unit for inserting in feedline at antenna for visual readings while making antenna adjustments. Housed in an aluminum box, Hammertone finish. Has all features as specified.

Amateur and Industrial net

$29.95

DUAL UNITS
MODELS CM-52-2 AND CM-75-2

Identical electrically to models CM-52 and CM-75 and has all features except in two units for remote control. Supplied with ten feet of cable and plug wired to control and indicator unit. Standard finish Dove Grey.

Amateur and Industrial Net
Phase and control unit

$34.95

SPECIAL CONTROL PANEL
For Collins Speaker Grill or Built-In Installations

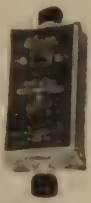
Special panel containing meter, control, reversing switch and with ten feet of cable and plug. For use with CM-52-2 or CM-75-2 phase units. Standard finish control panel and phase unit Machine Grey.

Amateur and Industrial Net
Phase unit and Control Panel

$34.95

MINIBRIDGE
MODEL CL-52-72

A resistive type unit for observing line standing waves when adjusting antenna match. For use with either 52, 72 or 75 ohm coaxial line. Designed for use with small amounts of RF excitation or Grid Dip Meter. Requires the use of an external indicator such as 0-100 Microamp meter.



Amateur and Industrial Net

$12.95

HARVEY is known the world over, wherever Hams operate, as a reliable source for Ham Equipment. All orders shipped same day received.

We're Generous on Trade-Ins
If You Want to Talk SWAPS and DEALS
write . . . or call **W2DIO**

NOTE: Prices Net, F.O.B., N.Y.C.
Subject to change without notice

Harvey RADIO CO., INC.
103 W. 43rd St., New York 36, N.Y. • JUdson 2-1500
Established 1927

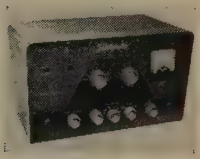
For further information, check number 21 on page 126.

New Amateur Equipment:

More on page 92

Tapped Mobile Coils

Master Mobile Mounts has a new coil available with a progressive shorting jack arrangement to cover 10-11-15-20-40-80. Just put the jumper in the correct set of jacks for the band you want and you are all set to go. Designed to work with 3 ft extension and 5 ft whip. Mark up A on page 126 for more hot scoop.

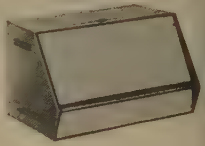


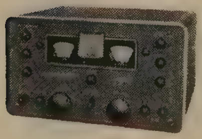
DSB-100 by WRL

Leo has just announced the first commercially produced amateur double side-band suppressed carrier transmitter, with the usual AM and CW available at reduced powers. 6DQ6A's in the final run 100 watts PEP on DSB suppressed carrier, 40 watts on AM phone and 50 watts on CW. Uses crystals or external VFO and tunes 3-9 mc and 12-30 mc, covering all popular ham bands plus CAP, MARS and emergency frequencies. The price is surprising: $119.95 in kit form and $139.95 wired and tested. Circle B on page 126 for info.

New Racks

Van Norman Industries are really hustling these days. Their newest line includes 19" rack cabinets and frames. The cabinets feature sloping panels, chassis support brackets, recessed handles, and flush fitting snap locks. These are real beauties. If you'd like a catalog just mark up C on page 126.





Hammarlund HQ-160

This is a general coverage receiver with the 540 kc to 31 mc range spread over six tuning bands. Double conversion, 14 tuned i-f circuits, Q-multiplier, X-tal controlled second i-f, 60 db notch filter, 100 kc standard, and scads of other features are crammed into this box. But then why expect everything in this little squib. Circle D on page 126 for all the real details.

KW Grounded Grid Linear

The B & W L-1001A runs two 813's at 1000 watts CW, 375 watts AM phone and 1000 watts SSB two tone test with your 3000 volt power supply. The broad-banded input circuitry requires no tuning. Bias and filament voltages are self contained. Price? Dunno, but they'll let you know if you indicate E on page 126. The unit is exactly like the L-1000A except you use your own power supply and save gool old m-o-n-e-y.

25 Watt Exciter

B & W has come up with a new idea, using four broadband 6AQ5 stages and one 807 amplifier for 25 watts output, this exciter switches with one switch from band to band, covering the 10-11-15-20-40-80 meter bands with an external crystal oscillator or VFO in the 3350-4000 kc range. For more data gouge out F on page 126.

Dummy Load

Workman TV, Inc., are making a 500 watt 50 ohm non-inductive resistor for dummy load applications. It is 18" long and 2" in diameter, designed to be clip mounted. This should turn out to be a real handy item. Net $42.00 What else could you possibly want to know? Circle G on page 126 and you'll know it.

AN OPEN LETTER TO ALL OUR READERS:

Dear OM,

Last year's first gigantic, colossal, behemoth ANNUAL issue was a smash success. This coming November we'll do it again, but we're going one step further in serving you, our readers. The DOUBLY GIGANTIC, COLOSSAL, BEHEMOTH 1958 ANNUAL will include at no extra cost a special distributor section as did last year's but in addition there will be a separate listing for each nationally advertised manufacturer listing all the distributors that stock his line of products.

The listings will look like this:

AMPEREX ELECTRONIC CORP.

Electron Tubes

1 Ack Radio Supply Co.
3101 4th Avenue, South
Birmingham 5, Alabama

3, 4, 5, 8, 9, 11, 13, 22, 24, 25, 27, 29,
51, 54, 56, 61, 63, 70, 71, 84, 85

This means the November issue will be a valuable buyers' guide as well as a SUPER CQ issue with more than FIFTY FABULOUS ARTICLES plus all our regular columns.

Be sure and ask your ham gear distributor to put a copy aside for you. (Or be doubly sure and subscribe now.) The November '57 CQ was a complete sell out despite an extra large printing. Don't be among the unfortunates of last year who didn't get their copy. Reserve yours today.

If your local distributor hasn't yet heard of our special distributor listings, urge him to write to Dick Cowan, CQ, 300 West 43rd Street, New York 36, N.Y. for immediate information.

73, Dick

DC-DC CONVERTER KITS

Special 125 Watt Kit

ONLY $44.95*

500 VDC @ 200 ma.
250 VDC @ 100 ma. from 12 VDC
65 Volt Bias Winding

Also, Dual-Voltage Kits, 6VDC & 12 VDC as well as Single 6 V, 12 V, & 28 V in power outputs of 30, 45, 60, and 100 Watts or more!

Toroidal XFMRS used for highest efficiency, smallest size & weight.

125 Watt		
	Transformer	$10.95 ea.
	Transistors	$10.95 pr.

Kits are complete with high quality transistors, XFMR's silicon rectifiers, hardware, case, & assembly instructions.

(*Factory wired, add $6.50) Write To:

ASSOCIATED R. F. SPECIALISTS
10750 Danube Ave., Granada Hills, California, U.S.A.

For further information, check number 20 on page 126

New Shure Slide Rule

The Shure Reactance Slide Rule has been famous for over fifteen years and the simplest answer to working out reactance problems, Q, and resonant fr quency. The rule has been in steady use by just about every radio school ev since its first appearance. Costs 75¢. See your parts dealer.

Anyone for CW?

Lafayette Radio has glommed onto some hand keys which they are selling for a record low price: 79¢. Bargain hunters will also be delighted with their $1.95 solid polished brass key, complete with silver contacts, ball bearing pivots, and circuit closing switch. Buzzer is 99¢. Circle J on page 126.

Triaxial Gamma Match

Hy-Gain has come up with a new and interesting idea in gamma match system This one provides a separate gamma for each band on the tri-band beams allowin optimum matching for each band with a resultant low SWR over a wide rang of frequencies on each band. Try circling K on page 126.

Basic Television Course

Rider has been real busy publishing a lot of new books lately. One set that they can be quite proud of is their new five volume "Basic Television" by A. Schure. The entire set runs to $10. The set is broken down into: The Transmitter; Organization of the TV Receiver; TV Receiver Circuits Explanations (3 vols). As usual the set is profusely illustrated and written for easy understanding. Keep up the good work there W2RID. Circle L on page 126.

Phone Patches

Cesco of Dayton has three types of phone patches available. The "Original" model, selling for $14.95, connects the phone line to your receiver or to you transmitter with a switch built in for changeover. There is a matching trans former in the patch to match the phone line, mike input and receiver outpu impedances.

The Cesco "Supreme" model phone patch has all the features of the "Original" model plus controlling the transmitter with the same switch as the phone patch Thus, when you turn on the patch you turn on the rig when you switch it to "Transmit." With the "Original" model you have to turn the transmitter on and off separately. Price is $24.95 Amattur Net. Notch M on page 126.

Tired of formulas and living on ur roof?
Wanna enjoy ur hobby and live-a-little too?

If so, latch onto and install a TELREX Model TB-7E. It's the only no-compromise one-transmission line "Tri-Band"® providing satisfying *top-man-on-the-frequency results* on 3-bands: 3 elements, 7 db on 10 meters; 2 elements, 5.5 db on 15 meters; 2 elements, 5.5 db on 20 meters; F/B . . 22 db on 10, 19 db on 15 and 20; no traps to break down, or tricks and formulas to fiddle with!

How much for TOP PERFORMANCE AND THE FINEST MATERIALS, TOO? ONLY **$158.00** f.o.b. AP.—N.J.

Wanna write instead? Complete Teck. info. free!

telrex LABS.
TV & COMMUNICATION ANTENNAS

ASBURY PARK 2, NEW JERSEY
Telephone: PRospect 5-7252

For further information, check number 53 on page 126.

KEN-ELS RADIO SUPPLY *headquarters for*

hallicrafters

SX-100 $395

RECEIVER

- Utmost mechanical and electrical stability
- Complete coverage of 7 amateur bands; 160, 80, 40, 20, 15, 11-10 meters
- Exclusive crystal-controlled upper lower sideband selection
- S-meter functions with A.V.C. off on.
- Tee-notch filter
- Built-in crystal calibrater

HT-32 $675

TRANSMITTER — EXCITER

- 5.0 mc quartz crystal filter cuts unwanted sideband 50 db. or more
- Bridged-Tee modulator; temperature stabilized and compensated.
- SSB, AM or CW output on 80, 40, 20, 15, 11-10 meter bands
- High stability, gear driven V.F.O
- 114 watts peak power input.
- Distortion products down 30 db. or more.
- complete band switching

SR-34

WRITE KEN-ELS
FOR PRICE

SEE
PAGE 12
JUNE, 1958

TRANSMITTER — RECEIVER

General description: The SR-34 is designed for either AM or CW and combines, for the first time in one compact package, the complete functions of a two and six meter radio station. It operates on 115-V A.C., 6-V. D.C., or 12-V. DC and features a highly efficient transistorized power supply for the 6 and 12 volt operation

SX-100 $285

SELECTABLE SIDEBAND RECEIVER

- Selectable saidband operation.
- "Tee-Notch" Filter
- Notch depth control
- Antenna trimmer
- Plug in laboratory type evacuated 100 KC Quartz crystal calibrator
- Logging dials for both tuning controls
- Full precision gear drive dial system
- Frequency range: 538-1580 kc. 1720 kc-34 mc.

KEN-ELS RADIO SUPPLY

V0ZKD—Glen
V0ZCN—Ken } *Fort Dodge*

W0CRP—Russ
K0ABO—Rog } *Cedar Rapids*

28 Central Ave., Fort Dodge, Iowa
Phone: 5-2451

67 16th Ave., S.W., Cedar Rapids, Iowa
Phone: EM 4-1172

0% down — 24 months to pay. Your trade-in may cover down payment. Export business welcomed.

For further information, check number 23 on page 126.

Can they read you?

now . . .
you can check
your
transmitter's

Power output
Audio level
Modulation
Distortion
Hum Level
% Modulation

on-the-spot yourself
with the all-new

TEST-O-MATIC®

Nothing like it anywhere! . . . and ONLY

$29.95

FS-3
FIELD STRENGTH AND MODULATION METER

Operates up to 300 feet from any transmitter and checks your signal strength by both meter and audio level. Ideal for Hams, Police, Planes, CD, and Fleet Operators. Look at all these big features!

- Transistorized
- High Q Tuned Circuit
- Self Powered (Battery)
- Complete with Six Coils for 148 to 2.7 MC
- Retractable Antenna
- Hand Size: 6" x 3¾"

Operates on single side band as well.

Write now for complete information or see your electronic parts distributor

SHELL ELECTRONIC MFG. CORP.
Dept. C8, 1688 Utica Avenue, Brooklyn, New York

Export: RIISE International Corp., 204 E. 38 St., New York, N. Y.

For further information, check number 51 on page 126.

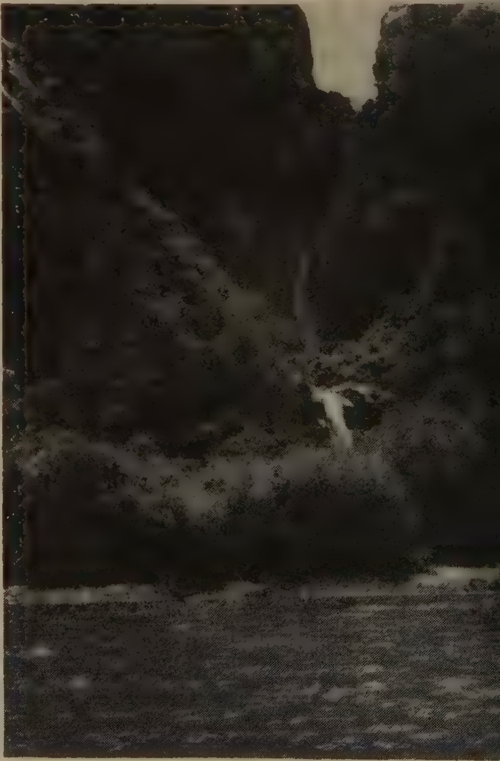
FRUSTRATION *[from page 37]*

signal than stacked beams and a Californ kilowatt. Most of the stations are running le than the 150 watt limit, and they work a fa tastic amount of DX. They are all accomplishe junk-box artists, and probably enjoy more the true ham spirit than we, with our dr toward brute force and manufactured gear.

Like many of the 7000 Europeans Uganda, the majority of the hams are in o branch or another of the government. Cons quently they are frequently on safari up-cou try or on leave and there are rarely more tha five who are active at any given time. AC available only in the larger towns at preser but juice from the great Owen Falls Da project is being pushed into other areas qui rapidly, which may help to put a few mo solid VQ5 signals on the air.

This was my first opportunity to compa SSB and AM under really difficult condition and the experience was a revelation. Take from an old die-hard, men. SSB is here to sta Time after time I've listened to solid copy fro a dozen or more side-banders, many of the running low power, when AM signals wer completely unreadable. Even signals too wea to budge the meter could be copied, whi only the strongest of the AM stations ros above the mass of heterodynes long enoug

[Continued on page 96]


The Nkusi River falls from Lake Albert—a fabulous fishing spot.

for the final proof of operating excellence . . . compare on the air!

THESE GREAT SERIES OF

hy-gain trap tribanders

the FULL-SIZE trap tribanders

99⁷⁵

the 3-element trap tribander

The 3-Element Tribander shown above is now considered as the standard of performance in the field of amateur communications. F/B Ratio: approx. 25 db. Forward gain: 8 db. average.

69⁵⁰

the 2-element trap tribander

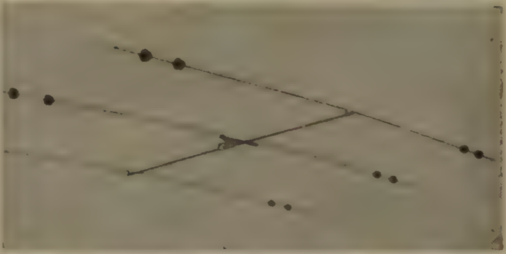
For use in limited space when top quality transmission is desired on 10, 15 & 20M. Single transmission line. F/B Ratio: approx. 18 db. Forward gain: 5.8 db. average.

195⁰⁰

the 5-element trap tribander

The finest, highest gain, rotatable array available. Heavy duty construction. Uses 36', 2x31" rectangular aluminum boom. F/B Ratio: approx. 25 db. Forward gain: 12 db average.

the NEW mini-tribanders



the 3-element mini-tribander

69⁹⁵

Extremely lightweight, only 39.8 lbs. Turning radius: 13'10", installable almost anywhere, yet boasting many features of the full-size line. Hy-gain top quality performance guaranteed.

the 2-element mini-tribander

49⁹⁵

Practically a featherweight: — only 33.8 lbs., easily one-man installed in the shortest possible time and nearly anywhere. Turning radius: 12'11". Top features at minimum cost.

Here's the smallest practical size consistant with efficient operation, to which the trap tribanders may be reduced. Install in the smallest city lots. Light weight & rotatable by most TV rotators. Factory pre-tuned, with dimensions given for quick, easy assembly in a matter of minutes.

Perfect 1:1 SWR is made possible by the new, pre-calibrated Triaxial Gamma Match System with coaxially formed reactance cancelling capacitor built in. Exceptional band width maintains low SWR over entire band. Coax connector for 52 ohm feed line included. Gamma [illegible] for exact setting over each band. No external baluns, antenna tuners or matching networks needed.

Split insulated dipole feed with coaxial choke results in SWR of less than 2:1 on all bands. No adjustments needed; simply attach 52 ohm feedline to dipole terminals. Heavy 12 ga. hot dipped galvanized steel channel and polyethylene insulated U-bolts support Hy-gain's driven element. Compare this construction with the flimsy supports using self-tapping metal screws.

The automatic switch action of the Insu-Traps is employed in both series of tribanders. They act as insulators at their resonating frequencies, but allow radio energies of other frequencies to pass, isolating various sections of the antennas. Mechanically and electrically stable, the traps are hermetically sealed at the factory in polyethylene cover and cap, completely weatherproof. Hi-Q coils wound on styron form. Guaranteed for the life of the beam. The Mini-Tribander Traps are specially weight-designed for wind loading efficiency.

Send for information on the Trap Tribanders as well as the Complete Line of

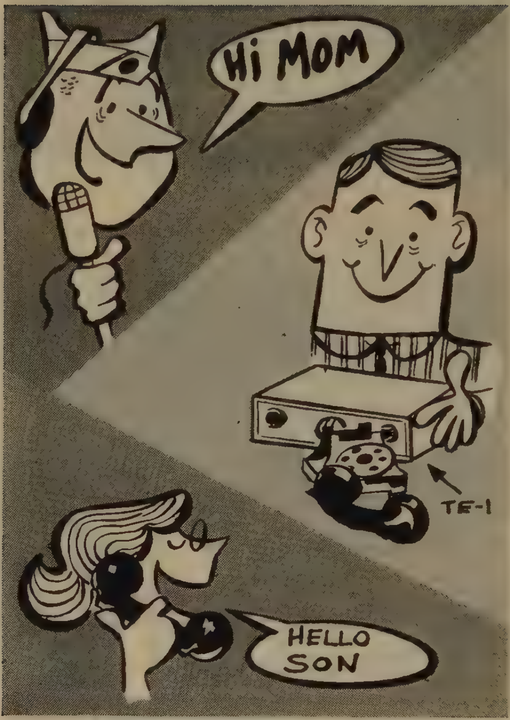
hy-gain antenna products

Terms can be arranged on both new and used equipment. Write W1RVQ for credit application form and an explanation of our terms and Used Equipment List.

Evans RADIO

P.O. BOX 312 • CONCORD, N. H.

For further information, check number 26 on page 126.



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PUBLIC SERVICE!

Raypar Model TE-1 Phone Patch provides perfect VOX or Press-To-Talk operation with all popular communications equipment. Installation is easy; all connections are external. Send for Bulletin TE558-10.

User's Net $32.50

RAYPAR
INCORPORATED
7800 W. ADDISON ST. • CHICAGO 34

For further information, check number 33 on page 126.

FRUSTRATION *[from page 94]*

for a useful QSO. Only the shortage of equi ment is holding the African hams back, an I suspect that in a few years much of th serious phone DX work will be done with th monkey chatter boxes.

Apart from the sad licensing situatio Uganda is a wonderfully interesting part of th world. Although it straddles the equator, mo of the country is 3800 feet or more above se level, and the climate is very mild. It is rarel above 85° during the day, and the nights ar invariably cool enough for a blanket in mo areas. The scenery is magnificent, and thoug hunting is not as readily available as in th neighbouring Kenya and Tanganyika, the tw great national parks provide the finest view c game in its natural setting to be found in a Africa. If, like me, you are a fisherman, you' find the local Tigerfish, Nile Perch, and Barb well worth a safari or two. Above all, Ugand offers a good sample of the traditional Eas African hospitality and wonder of wonders— the beer is always served cold!

So pop around if you are in this part of th world. Bring your camera, fishing gear, an thirst along—but if you value your sanity leave that receiver at home. ■

SCRATCHI *[from page 14]*

needing hay, and he saying his dispatcher tell ing him to bringing out load of hay. Scratch just starting to get into 1/c argewment whe heering tinkle of bells and into driveway comin panel truck and driver asking me where h putting load of diapers. I giving him sam rewteen, and he say his 2-way radio dispatche telling him to deliver, right here, cupple load of diapers.

What I yelling back at him he never heering on acct. just then to large, hevvy concrete-mix trucks roaring into driveway, and first drive asking where I wanting concrete poured. Can' even answering, not when following him in ar coal truck and nursery truck with cupple ton of peet moss on it.

I prolly still be there argewing with various drivers of trucks if not cupple of them calling dispatcher on 2-way radio and finding that they not having any orders to delivering coal, diapers, peet moss, concrete or hay.

So what are happening? Well, I getting glimmer of idea when are seeing each truck having 2-way radio, but if you thinking I telling truck drivers about it you crazy in hed.

Evidently are having slite parasite in to mete rig what putting rig on channel where 2-wa radio peeples working. You not thinking tha likely, Hon Ed?

Are only one consolayshun. If are needing any peet moss, diapers, coal, concrete or likewise will surely be able to getting it in 1/c hurry.

Respectively yours,
Hashafisti Scratchi

r Coupling Energy Into Space . . . Anywhere in the Radio Spectrum

hy-gain HAS THE ANTENNA!

the hy-gain Multi-band trap antennas

The Full-Size Trap Tribanders

There are more hy-gain Trap Tribanders in use than all other 3-band beams combined [illegible] the startling Insu-Trap which effectively [illegible] automatic switch action. New [illegible] Gamma Match Systems afford 1:1 SWR. [illegible]

3-Element Tribander	$ 69.50
[illegible]	$ 99.75
[illegible]	$495.00

[illegible]

Triaxial Gamma Match System with coaxially formed reactance cancelling [illegible] for built-in [illegible] makes possible [illegible] SWR. Pre-[illegible]

The Trap Verticals

Using the Insu-Traps, these Verticals also feature the nylon base assembly for self-support. Use Capacity Hat principle to increase radiating efficiency. Less than 2:1 SWR on all bands. Single 52 ohm feed line.

26-AV (for 2 & 6M)	$16.95
12-AV (for 10, 15 & 20M)	19.95
14-AV (for 10-40M)	27.95
18-AV (for 10-80M)	69.50
12-AV Mount Kit	8.95
14-AV Mount Kit	9.95

4 & 5-Band Doublets

Hi-Q Insu-Trap circuits used with pressure clamp ends: — Insu-Traps for 10-80M, traps only, per pair, $12.50. Insu-Traps for 10/40M, traps only, per pair, $12.50. 4-Band Doublet Kit (less traps) for use with traps, $14.00. 5-Band Doublet Kit (less traps) for use with traps, [illegible]

The Mini-Tribanders

[illegible] banders can be reduced for [illegible] the weight easily cut [illegible] with dimensions for rapid assembly. [illegible] turning radius. Special Insu-Traps [illegible]

2-Element Mini-Tribander —	$49.95
3-Element Mini-Tribander —	$69.95

The RotoBrake

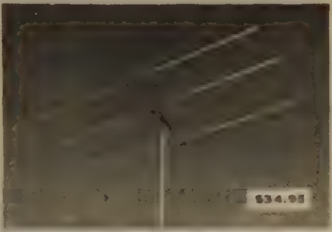
At last, a complete rotating assembly which [illegible] and can be [illegible] on. Includes powerful twin 3600 rpm motors built-in. 750 in. lbs. rotating power [illegible] 000 in. lbs. braking power. Great Circle Wall Map indicator with indicator, a moving wedge of light, 10° wide at perimeter, shows beam width and direction.

$\$149^{95}$

The Monobanders

Perfect 1:1 SWR with the new Coaxial Gamma Match System pre-[illegible]. All beams pre-tuned and pre-matched complete with easy-to-follow [illegible]. Large diameter elements with ruggedly built Boom-Mast clamps.

10M	3-Elements	$24.95
15M,	3-Elements	$34.95
20M	3-Elements	$50.95



The VHF Beams

[illegible] for the VHF bands of 1¼, 2 and 6M. Sturdy construction throughout. Additional gain [illegible] through stacking. New Gamma [illegible] Match system makes possible perfect 1:1 SWR.

6M	5-Element	[illegible]
6M	8-Element	$26.95
2M	5-Element	$ 6.95
1¼M	10-Element	$ 9.95
2M	[illegible]	$10.95

Wall Map Indicator

tator & Brake

E

LECTRONIC SUPPLY
[illegible]

LECTRONIC SUPPLY
[illegible] Drive • Melbourne, Fla. • Phone [illegible]

LECTRONIC WHOLESALERS, INC
2345 Sherman Ave. N.W. • Washington 1, D.C. • Phone Hudson [illegible]

For further information, check number 24 on page 126.

TRANSFORMER NEWS FROM TRIAD

Type No.	*D.C.Volts Output	D.C. Ma.	Max. Watts	Net Price
TY-68S	250	65	16¼	$ 8.34
TY-69S	300	100	30	10.56
TY-70S	325	150	48¾	11.40
TY-71S	375	200	75	12.30
TY-74S	600	200	120	15.00

*Center tap output winding provides half voltage at full rated current, high side full voltage at half current.

POWER TRANSFORMERS FOR 12-VOLT TRANSISTOR POWER SUPPLIES

Center tapped output windings are provided so that two simultaneous voltages may be used, if the total power in output watts is not exceeded. Especially designed for mobile transistorized power supplies, these new transformers permit an efficiency of 80 to 85% in the entire power supply.

Available now from your Triad Distributor. Ask him for special bulletin giving schematic and specifications or write direct to Triad for this information.

TRIAD TRANSFORMER CORP.
4055 REDWOOD AVE. VENICE, CALIFORNIA | 812 E. STATE STREET HUNTINGTON, INDIANA
SUBSIDIARY OF LITTON INDUSTRIES

For further information, check number 50 on page 126.

Letters . . . to the editor

A Shocker, This . . .

Dear Wayne:

I imagine you and also the thousands of your rea have gone through an electrical shock. Those that still alive, thank God first. After 1500 Volts—a comple that turned white—a nervous system that went into oscillation, a wrist watch that was missing, a left w and hand that was bleeding, this poor soul sat down. power was off!! It was open!! Sure, so was the bleede

Over 10 years ago CQ published an article on elec shock. It is the November issue 1947—preserved very in my shack. I think it is the duty of *every* Radio Ama Publication to print this article at *least* once a year. the influx of the younger generation into the Novice r it should be published for them and also for the older that forget the basic laws of safety.

Let us all remember that a voltage above 25 Volts cause death!

Another,
Wayne "P" Green, W8

Mobill vs. Mo-bile?

Dear Sir:

I have just been glancing through my October, copy of CQ Magazine, and read the "Pet Peeves" ar by W5AXI/MM. While I agree most heartily with comments, I must take exception to one glaring er

As a dauntless proponent of the correct usage of English language, I must disagree with his advice garding the pronunciation of the word "mobile." Acc ing to all the laws of English grammar, at least whe went to school, (I doubt that they have changed) the on the end of "mobile" dictates that the "i" be given pronunciation as in, to use W5AXI/MM's example, "bi

Now, I will go so far as to concede that this may apply to correct usage of "English" as-she-is spoke, our fair American cousins. I have personally seen exam of this very case; nevertheless, recognizing the fact English is a fluid, or changing language, the basic of grammatical usage do not change, simply because more or less local adoption of certain pronunciation

Now to get back to my issue of CQ. Hope to CU with any one antenna.

L. D. Laurie, W7T

Nothing Fishy Here

Dear Wayne,

Here's a "hint." This nylon Seine Net cord makes fine guy wires, and is more reasonable than w It has a test of about 450 lbs. It is easily obtainable most hardware stores, as masons use it for chalk in constructing buildings. The cost in this locale is ab $1.25 per ¼ pound, which contains about 225 feet.

The only thing to be careful about is abrasion. I h found that plain black tape, surgical tape or electr tape, wrapped around a place that might be abra works very nicely. This cord will last about five to years here on the desert, which is too long to be ha with a new VE8 call.

Paul MacDougall, VE

Oh Joy! A Subscription!

CQ Magazine
300 West 43rd Street
New York 36, New York
Attention: Janitor

Dear Janitor:

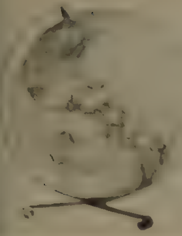
After being a faithful newsstand buyer all these ye now you've done it to me. I'll never read your maga again! In fact I want it sent to my worst enemy; a 3- subscription will really make him sick!

Disgustingly yours,
Anonymous

• • • • • • • • •

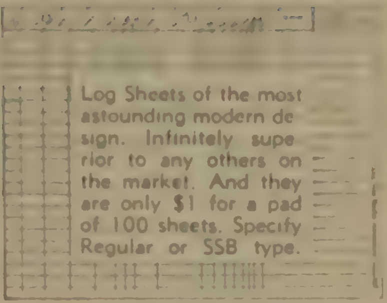
YOU SAW IT IN CQ

THE HAM SHOP



GLOBE

Here it's Wednesday already . . . what better time to give the XYL this globe for your shack . . . and you're getting a *FREE* year of CQ to boot. Costs $25.00 in the stores . . . only $19.95 on this CQ deal.



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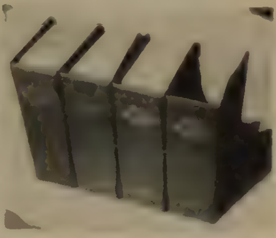

ATLAS

Come on, get with it Don't pull a blank when some one asks you for the capital of Honduras For only $12.50 you can own 7 lbs. of full-color maps and a complete gazeteer. Send for this Hammond Atlas. PLUS a one year subscription to CQ.
only $12.50

MOBILE HANDBOOK

This new Mobile Handbook by Bill Orr, W6SAI, has been getting raves from all of the experienced mobile operators. There is all sorts of information in here that cannot be found anywhere else This is NOT a collection of reprints. $2.95 postpaid.

COMMAND SETS

This IS a collection of reprints, containing all of the available information on the conversion of the popular "Command" transmitters and receivers into good ham transmitters and receivers. Invaluable for Novice, Technician, General, Advanced and Extra class operators. 136 fabulous amazing terrific pages for only $1.50 PPD

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oken French, Spanish,
ilian, German Swed-
and Finnish This
ndy little book gives
the popular ham
nversation in seven
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s and numbers Only
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CODE RECORD

Learning code is a snap with this record Speeds from 3 to 16 WPM depending upon 12" LP record has on it all you need to learn the code for turntable speed This both the Novice and General license. $3.50 each

C-7

CQ Magazine
300 West 43rd St.
New York 36, N.Y.

SIRS My check (money order) for $ .... is enclosed. Please send the following items t ☐ Globe ☐ Atlas ☐ Binder Year Wanted ☐ Log Sheets ☐ Mobile Handbook ☐ Command Sets ☐ Ham's Interpreter ☐ Code Record

NAME ....

ADDRESS ....

CITY .... ZONE ....STATE ....

New York City residents add 3% Sales Tax

ANNOUNCEMENT

Effective with this issue a new section will appear in CQ where distributors may advertise trade-in and reconditioned equipment. This section, called the TRADING POST will be confined only to legitimate ham distributors as a means of announcing the many excellent used items available.

National NC-46 Receiver $59.95, HRO-5 National With Coils & Spkr. $119.95, Model 701 MCMurdo Silver Xmtr. with coils & instructions $29.95, FTR Morrow receiver with 5BRF Converter & 6 volt power supply $99.95, Collins 32V3 Transmitter $529.00, Hallicrafters S-40 Receiver $59.95, PMR-6 ELMAC Receiver 6 Volt w/ps $79.95, PMR-6 ELMAC Receiver 6 Volt less Ps. $69.95.

CRABTREE'S WHOLESALE ELECTRONICS
2608 Ross Ave., Dallas, TEXAS

RECONDITIONED EQUIPMENT LISTINGS

HQ 129X receiver	$ 159.00
NC 300 receiver	319.00
NC 183D receiver	329.00
Collins KWS-1 xmttr.	1,399.00
Hallicrafters HT30 (SSB)	349.00
Collins 30K-1 smeter	595.00
Globe King 500 xmttr.	449.00
Globe King 500A xmttr.	475.00

WORLD RADIO LABORATORIES
COUNCIL BLUFFS, IOWA

RECONDITIONED. Shipped on approval with easy terms. Hallicrafters S40B $79.00; SX99 $119.00; SX71 $149.00; SX96 $189.00; SX100 $229.00; SX101 $299.00; HQ129X $159.00; HQ100 $139.00; HQ140X $189.00; HQ150; National NC98 $99.00 HRO50T $199.00; NC183D $279.00; NC300 $279.00; Viking I $129.00; Viking II $199.00; Ranger $179.00; Valiant; Pacemaker; PMR6A; PMR7A; AF67; Collins 75A1; 75A2; 75A3; 75A4; KWSI. Many other items. Write for list. HENRY RADIO CO., BUTLER, MO.

B & W 5100 @ $350.00 COLLINS 75A-1 with mech filter @ 315.00 COLLINS 32V-2 @ 370.00 ELENCO MOD 77 @ 450.00 Johnson 500 @ 695.00 NAT'L NC-183 @ 169.00 PIERSON HOLT KE-93 190.00 RME VHF 152A @ 44.50 WRL CHAMPION 300 @ 375.00 WRL GLOBE KING 500 @ 475.00

BUSACKER ELECTRONIC SYSTEMS, INC.
1216 WEST CLAY HOUSTON 19, TEXAS

O-T REGENERATION *[from page 47]*

which there is no room for opposition. It
in the operating end.

In no other branch of amateur radio
one get into a QSO so easily and quickly,
get out, for that matter. With voice-break
the ability to understand two or more voi
talking simultaneously, SSB offers much m
excitement than AM. And, unlike AM
C.W. operating, in SSB, if you don't have a
thing to say, you just stop talking and
other fellow takes it up. The long-wind
sometimes artificial conversations are go
thank God.

It is, in truth, a new, excitingly differ
World of Amateur Radio where young
old alike are finding pleasures beyo
imagination. One day, not far from now,
will be SSB and there will not live a sin
inactive amateur for all old-timers will be
generated.

Thank you, George and Harvey.

TUBES *[from page 46]*

Some large tubes require forced-air cooli
and with these, an alarm should be provid
for the failure of this important item. In co
mercial installations it is customary to pr
vide a Microswitch with a vane attached to t
lever arm so that the air blast keeps t
switch closed. Unless you are using a d
filter for the cooling air, which may beco
clogged, about the only way you can lo
air is for the blower to stall, and if you ha
provided a slo-blow fuse in the motor circu
this can be arranged to remove power fro
the tube as well as the motor.

Fig 4 shows a complete safety chain f
a transmitter, designed to operate in conjun
tion with the screen protective circuit of *fig*
Closing the switch circuit breaker in the li
circuit turns on the transmitter and rectif
filaments and provides primary power f
the various low-voltage supplies. Providing t
blower is delivering air a filament time-del
relay will begin counting down, after it go
and assuming that the various switches a
interlocks are closed, it is possible to turn
the plate and screen voltages. It is importa
that any switch or protective device that
moves the plate voltage also removes t
screen voltage, since depending upon t
screen overcurrent circuit to do it for you
only inviting trouble.

watch for the
GIGANTIC
NOVEMBER ISSUE

OVICE *[from page 79]*

the Novice license is invited to join the ass. The phone is SUnset 4-3167 or look for em on two and six meters.

Howard Nichols, KN21BK, East Mountain oad South, Cold Spring N. Y. will be glad assist prospective Novices.

Robert Markman, KN2JPH, 1785 Towns-d Avenue, Bronx 53, N. Y. will give a help- hand to prospective hams.

Lester Sade, 652 Second, San Bruno, Cali-rnia can be counted on for a helping hand.

The following persons like assistance in ob-ning their licenses:

2—David Rajewski, 659 Lansing Street, Schenectady, N. Y.
W. Schmeis, 129-14-135 Avenue, South Ozone Park, N. Y. Phone Jamaica 9-4475
Charles Louda, 430 E. 105 St., N. Y. 29, N. Y. Phone LE 4-2147

4—Doug Thurston (13), 603 Hill Street, Rocky Mount, N. C.
Ed. DA. Charles, Jr. (15), 513 Rosewood Drive, Florence, S. C. Phone MO 9-9812

5—Earl Saucier (40), 135 E. Laurel St., Magnolia, Mississippi.

7—Richard Imes (14), 315 Lark Casper, Wyoming. Phone 3-5285
George Babb, 240½ W. Main., Apt. #37, Spokane, Washington

9—John Dynda, 1612 N. 74 Court, Elmwood Park, Illinois. Phone GLadstone 3-0701.
Thomas Flasch (13), 918 W. 35 Place, Chicago 9, Illinois.
Bob Bernat, 8551 Kimball Avenue, Skokie, Illinois.

0—R. B. Callan, 5025 Walnut, Kansas City, Mo. Phone VA 1-5686 or GR 1-5460.

Letters

Robert Markman (15) KN2JPH, 1785 wnsend Avenue, Bronx 53, N. Y. says: "I ild—not buy." Bob is using a surplus BC-5 and BC-453 for receiving and a Knight watt transmitter modified for a 6146. That's e spirit, Bob, keep up the good work

Bob Brown, 67 Russell Avenue, Rahway, J. is working on his 4th ARRL log book d has over 500 QSL cards on the wall. He cently passed his General test and plans to e the CQ Tested Modulator on 75 and 40 eter phone.

Sanford Hutson, Box 27, Stuttgart, Arkan-s has worked 8 states since receiving the ll KN5QHS. He runs a DX-20 into a 40 eter dipole on 7185 kc. Sanford would like see the new Novice calls in this column. I'm orking on it, OM.

Wayman C. Dunlap, K5MDZ, 136 Pike venue, Jacksonville, Arkansas inhales with S-38C modified for a Heath QF-1 "Q"

[Continued on page 103]

BACK ISSUES FOR SALE

1947—All issues, except Jan., March, April, June, July, August, Nov.
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1952—All issues, except Jan., Aug.
1953—All issues, except May, July, Dec.
1954—All issues, except Feb.
1955—All issues, except Nov.
1956—All issues, except April, July
1957—All issues, except Feb. and Nov.
1958—All issues

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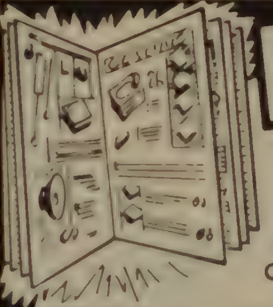

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For further information, check number 47 on page 126.

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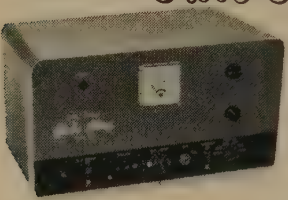
More Low-Cost Power
from GLOBE electronics
FORMERLY WRL Electronics
LEO I. MEYERSON, W0GFQ

with the Globe Chief 90A



$6.15 per mo.
$7.45 Down or $74.50 Cash
IN KIT FORM:
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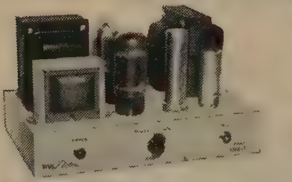
$6.00 Down or $59.95 Cash

Completely bandswitching, 90w CW Xmttr. for 10-160M. Compact, with well-filtered, built-in power supply. Pi-Net for 52-600 ohms. Modified grid-block keying for max. safety. Provisions for VFO input & operation, conversion to fone with Plate or Screen Modulator. Shielded, new Forward Look Cabinet. Kit contains all parts, tubes, instructions & pre-punched chassis.

Convert to Fone With the
Universal Modulator UM-1



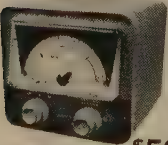
W/T: $49.95
Kit (less tubes): $32.50
Steel cover accessory: $3.00 extra.

Supplies 10-45w audio output depending on tube types. May be used as Class A or AB2 modulator to modulate RF inputs 8-100w (or as driver for higher power modulator). Output matching impedance from 500-20,000 ohms. Carbon or crystal mike may be used. Dual purpose 6U8 speech tube. 6F6, 6K6, 6V6, 6L6 or 5881 tubes may be used as modulators.

Or the Screen Modulator Kit SM-90
Printed Circuit Board
Permits radio-telephone operation at minimum cost. Self-contained. All connections from modulator to Xmttr. included, as well as latest design printed circuit board, all parts and complete instructions.

$11.95

Globe's VFO 6-2



For the 6 and 2M bands. Perfect zero beat with exclusive bandspread control. Built-in, well-filtered power supply, including voltage regulation. Temperature compensated. Calibrate switch for zero-beating signal frequency with Xmttr. off. Approx. 50V RF output. Plugs into Xtal. socket of Xmttr. Also available, VFO 666 for 6M only, w/t: $49.95.
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For further information, check number 27 on page 126.

XYL *[from page 48]*

painted his nice new receiver black, to matc the old transmitter. While he was in the ho pital recovering, his OW decided ham radi was bad his health, and sold all of his equi ment.

If you have gotten this far, now is the tim to make your pitch. Devote less and less tim to your favorite band, and more time to th YL. Start cleaning up your shack and chario etc., so she can see that you are trying to tur over a new leaf in order to be worthy of he It may be wise to re-install the mobile rig this time, so that she can get accustomed to it. you wait until after the ceremony, she may la down the law.

Let things continue as they are for a fe weeks, while you devote some time and cash t the purchase of new equipment you may nee Be sure to do this *now*, since it will be a lon time before you buy new gear, after the cere mony. Remove a few knobs, scratch the cab net, and store in a dusty place. Later, whe you remove the gear from it's hiding plac you can claim that it's just some old stuff whic has been laying around for ages.

Now you are ready to pop the questio Drive to a dark, lonely spot, and keep you mouth shut. Clam up completely, and star off in the distance. You should be quite pro ficient at this, by now. When she asks why yo are so quiet, assure her that it is nothing a all, and resume staring. Invariably, she will as again. Now you can explain that you care s much for her, etc., but that you can't believ that anyone as nice as her could possibly car for you. If she is at all normal, she will as sure you of her feelings, and you can po the big question while she is feeling romanti and sympathetic. At this time, if your ap proach has been right, you stand a very ex cellent chance of getting a favorable answe immediately. When you have the answer yo have been waiting for, take her home befor she realizes what she has let herself in fo and plan the ceremony as soon as possibl

Now you have reached your ultimate goa and can sit back and wonder if it all wa worth the effort. Opinions on this will vary depending upon the qualities of the YL. Nov might be an excellent time to sit down and cry since your days of DX contests, QSO partie and other activities may be curtailed for som time to come.

Be sure to look me up on 20 meters and le me know how things worked out for you. I' usually on the low end of the CW portio almost every day, sitting around in my sma bachelor apartment on Waikiki, sipping a co one. If you have any trouble getting the XYL in terested in ham radio, be sure to give me call and I will be glad to furnish foolproof in structions for getting her a license. Good luck 73's and C U L.

OVICE [*from page 101*]

ultiplier. His exhaler is a WRL Globe Chief). Wayman will sked for any reason and SL's 100%. Sorry I couldn't use the pix ayman but it was too "teenie weenie."

Bud Question Mark, KN4SSM, 815 Cole-an Street, Raleigh, North Carolina has just ompleted his WAC and is waiting for the SL's to come in (gud luck!). His WAS total 43 worked and 40 confirmed with a Globe hief 90 transmitter and a HRO-60 receiver. three element beam, a dipole, and a long ire complete the picture. Bud also has con-ructed the Knight Kit Receiver and likes it ry much. He would like skeds with Nev., rk., Del., N. H. and Maine. Also if anyone interested in getting a net going in his area, op him a line.

Alan Armstrong, W7JBG, 829 S. W. 143rd, attle 66, Washington would like to stress that kilowatt isn't necessary for DX work. He ns an AT-1 with about 7 watts output and s a terrific string of DX contacts to back his point.

William H. Hall, Jr., K8EKT, 5095 Sandy d., SE., Canton 7, Ohio brings a "goof" to y attention. He points out that the DX-20 ins 50 watts input (500 volts—100 ma) and t 70 watts (700 volts—100 ma) as I said. ly face is red, Bill.

Larry Fuller, KN?, 2125 East 4th Avenue, esa, Arizona has been on the air for three onths running a Globe Chief and an HQ110, d has worked 31 states plus KH6. He needs ev., Wyo., La., N. Dak., N. Y., W. Vir., lont., and Miss. and would like skeds. Look r him on 40 and 15 meters.

Ken Question Mark (no relation to Bud), N2KUT, 2244 Nottingham Way, Trenton, . J. is going to take his General exam soon nd would like to complete his WAS as a ovice. He would like skeds with Ida., S. D., laine, and S. C. With a DX-35 and an S-76, en has worked VK3TX, ZL1APM, and U1AG. Nice going, Ken.

Harold McDermott, KN8HIW, 2155 Sum-ners Avenue, Kent, Ohio would also like some elp making WAS as a Novice. He needs the tates of Vt., R. I., Maine, Fla., and Ala. Hal an be found on 7173 and 7190 running an T-1 and an NC-300. He QSL's 100%.

Bob Johanson, 9624 Crawford, Skokie, Illi-ois holds the call KN9JTI and operates 15 eters with a Knight 50 watter and an SX-99. le has racked up 46 states in 10 months and he DX includes KG4, KP4, WH6, G2, VE2, , and 8. Bob would like to mention that he s looking for a used Viking Ranger. By the ay, Bob, see the help wanted section.

That will fill the pages for another month, ellows. Don't forget to keep the pictures com-ng (large as possible please). The column is retty bare this month.

73, Don, W6TNS

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Special! FT-243 Prec. Calib. to 1st Decimal

2 Meters | Exam: *8010 6 x 18—144.190
Exam: *8010 x 18—144.180

Note— 10 KC difference between the above

6 Meters | Exam: *8340 6 x 6 - 50043 6
Exam: *8340 x 6= 50040

Note—3.6 KC difference between the above

This is a must if you want exact freq. on these 2 pop. bands.

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Don't take chances with uncalibrated surplus—Be sure of freq.

NOVICE BAND FT-243 Fund. or DC-34 Freq. ... 99c
80 Met. 3701-3748—Steps of 1 KC. FT-243 or DC-34
40 Met. 7150-7198—Steps of 1 KC. FT-243 only
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1000 KC-DC9-LM-BC 221 Std.............. $6 25

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For further information, check number 28 on page 126.

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15 TUBES — 435 to 500 MC
Easily modified for two-way voice or code on 460-490 Mc Citizens' Band and experimental bands. BRAND new with all tubes, conversion booklet, in factory carton, Wt 25 lbs, less 12V Power Supply........$29.50
All Accessories Available!
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ALL COMPLETE WITH TUBES

Type	Description	Excellent Used	Brand NEW
BC-453	Receiver 190-550 KC	$14.95	$18.95
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BC-457 TRANSMITTER—4-5.3 Mc. complete with all tubes and crystal. BRAND NEW........ $7.88
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ARC-5/T-19 TRANSMITTER—3 to 4 Mc. BRAND NEW complete with all tubes & crystal........ $8.88

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Complete kit of parts with metal case, instructions.... $7.95
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2-meter Superhet, 100 to 156 Mc in 4 crystal channels. Complete with 10 tubes.
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Terrific buy! VHF Transmitter-receiver, 100-156 Mc. 4 channels. Xtal-controlled. Amplitude modulated voice. They're going fast! Excellent condition.
SCR-522 Transmitter-Receiver, complete with all 18 tubes, top rack and metal case.
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BC-603 FM RECEIVER. 10-channel pushbutton tuning or continuous tuning. 20-28 Mc. Complete with Speaker, tubes, squelch, 12V Power Supply.
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For further information, check number 29 on page 126.

SB [*from page 83*]

stock up on food, water and gasoline and begi another trip to the remote spots of the Pacific Danny operates SSB on 14,309 at 2300 GMT

Friends of Peter, OZ3EA, will be pleased t know that he will arrive in the USA early i August and that he plans to visit as many SS hams as possible. He will arrive at W3SW fo a week's stay around August 17th.

Your Editor was interviewed by Bill Leonard, W2SKE on a Voice of America program about SSB and I was very surprised and please to learn how many Hams listened to it all ove the World.

John, PY2JU is now up to 105 countrie and should soon have the necessary QSL's t qualify for his "Worked 100" certificate. Cyri VK3AEE is over 125 worked. A suggestion has been made by several that we start qualifying for W.A.Z. on SSB. What say?

Charles, W0CVU is stuck at 72-confirmations, with 80 worked is willing to offer a cu to the one who gives him number 100. Charle said he has tried every other way to get there Hi.

Now for the news many of the SSB station have been awaiting, especially the hundreds o newcomers to SSB who were active in SS activities previously.

ANNOUNCING A Worked All States Contest for SSB to be held the week-end of September 20th. Bill Leonard, W2SKE, a well known name in SS and DX Contests suggeste that we sponsor a SSB-SS and will award to the contest winners a beautiful W.A.S. QSL Album with the call letters in gold. While this contest is principally for US Hams, foreign stations may participate. Details will be given frequently on Bill's V.O.A. Broadcasts.

The Contest will begin on *Saturday, September 20th at 1200 EST* and *end at 1200 EST on Sunday, September 21st, 1958.* (A 24 hour period.)

Simple Scoring: Total contacts times the number of States worked.

Bands: Any or all Amateur bands may be used, but a station may only be worked once. There is no multiplier credit allowed for multiband operation.

Serial Exchange: Signal report plus consecutive number of contacts (59001) plus name of State. Foreign station will substitute his Country.

Eligibility: All SSB Hams. U. S. stations can count foreign stations including VE for contacts but not as a multiplier.

Prizes: A W.A.S. Album (including call letters in gold) to all State and Foreign *winners who have worked all 48 States* in the Contest period. Certificates will be awarded the top scorers in each State. Also certificates to five top scorers in North American

[*Continued on page 106*]

ASSEMBLE YOUR OWN

WALKIE-TALKIE RADIOPHONES

ieneral specifications applying to all models:

Highest quality workmanship and materials. ilver plated coils, ceramic capacitors and ad anced design assures maximum performance vith the longest battery life. Sensitive re eivers can detect signals as small as one mi rovolt and feature automatic volume control ind noise clipping. Transmitters use high level mplitude modulation, have a power input of ne watt to the R.F stage and will radiate a ignal for 1 to 5 miles (depending on obstruc tions) using antennas supplied Up to 40 miles ave been reported by some of our customers vhen communicating with stations having di ectional beam antennas. Radiophones can be sed singularly to communicate with fixed sta ons or two or more to communicate with each other pro iding they are for the same frequency band. Fully portable, o external connections needed. Uses standard radio and lashlight batteries available at your local store. Total weight f completed unit including all accessories is less than ½ lbs.

Model TC-144 Meets F.C.C. requirements for general class mateur license. No minimum age requirement. Variable requency transceiver circuit. Tunes from 144 to 148 mc. Vired tested and guaranteed electronic chassis complete ith two high frequency triodes 3A5 $7 98

Model TR-144 Similar to above but with independently uned receiver and transmitter circuits using 4 high fre uency triodes (2 3A5's). Permits receiving frequency to be hanged without affecting transmitting frequency $11 98

Model TRX-50 Crystal controlled transmitter and variable requency receiver with R.F. stage. Tunable from 50 to 54 c. Meets F.C.C. requirements for general and technician lass amateur licenses as well as for civil defense and other pecial services. Wired tested and guaranteed electronic hassis complete with six high frequency triodes. (3-3A5's) $16 98

Model TRX-50-A. Similar to above but with transistorized udio booster stage for extra loud reception $18 98

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Very active quartz transmitting crystal for models TRX-50 and TRX 50 A ground to .01% of your desired frequency and hermetically sealed $3.98

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FREE power output indicator kit with each order over $20.00.

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For further information, check number 52 on page 126.

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CONGRATULATIONS, GENTLEMEN, on your shrewdness, your business acumen, your obvious display of intelligence. The editor thanks you. Suzy thanks you. For, besides being a clever way to save a lot of money, your subscription is also an encouragement to all of us to work a little harder to bring you a darned good magazine.

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.01% Tolerance	**$1.75**
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Compact, portable, in attractive metal carrying case with handle. Size: 4"H x 3"W x 6"D. Connects to any receiver to get 100 KC markers from 100 KC to 50 MC. Factory wired with two transistors, one 100 KC crystal, self-contained battery. Shipping weight, 10 oz. Add 50c for prepaid parcel post. **Net $17⁹⁵**

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Matched pairs ± 15 cycles **$2.50** per pair.

200 KC Crystals, **$2.00;** 455 KC Crystals, **$1.00;** 500 KC Crystals, **$1.00;** 1000 KC Frequency Standard Crystals, **$3.50;** Dual Socket for FT-243 Crystals, **15c;** Ceramic socket HC/6U Crystals, **15c.**

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For further information, check number 30 on page 126.

SB *[from page 104]*

Continent plus the top five in each of the othe five continents.

Logs: To qualify, all logs must be receive at CQ Headquarters by October 20th, 1958 There will be available from CQ official lo blanks, but it is not necessary to use thes particular forms. Talk this Contest up on th air fellows.

73, Bob, W3SV

CLUB BULLETINS *[from page 16]*

bers able to copy 15 wpm. R. McCoy, K9DZF editor *SWANI NEWS*, S.W.A.N.I. A.R.C sends in word of a club sponsored "WAS" contest. Members draw 1 fictitious QSL card fron a box at each meeting. First to make "WAS wins a prize. The DDD Dxer, Blackstone Valley A.R.C. Inc., runs a column describing a J Member Plan, designed to provide young members with a course of instruction at a level tha they can understand.

That's it for now. Next month more news Until then, 73,

73, Marv, VE3DQ

MINIBEAM *[from page 31]*

tail a loss of efficiency, and this is true up t a point. Although a dipole can be shortene to half its normal length and still retain a efficiency of 95% it does not necessarily wor out this way with shortened *beams*. It is generally found that a *16 ft.* short beam on 20m wi produce a gain of 3db at the most. Increasin the elements to 22-24 ft. will provide a gai of perhaps 4-4½ db. Further lengthening t 26-28 ft. will provide about ½ to 1 db additional gain and the performance will the be practically identical with that of a full siz beam. This technique *can* be used with th Minibeam if site conditions permit the use o longer elements.

For example, the reflector and driven element can be lengthened to 26 or 28 ft. so a to slightly increase the 20m. gain. The reflector will then have excess inductive reactanc on 15 metres, but this can be corrected b shortening the 15m 'Quarter wave shortin stub' till it has a capacitive reactance equa and opposite to the inductive reactance whic it is desired to eliminate. Ten metre resonanc can be maintained by means of a condenser a in Fig. 3. The disadvantage of this approac is that there will be interaction between th tuning on the three bands, so that adjustmen becomes rather laborious, and it is doubtfu whether the extra db or so of gain really justifies the extra work involved.

With the normally recommended elemen lengths the quarter wave shorting stubs effectively isolate the twin boom loading on te and fifteen metres respectively, so that n interaction occurs and tuning adjustments are delightfully simple. ■

AM CLINIC *[from page 75]*

› you like for feeding a dipole or folded pole? (Transmitter has a pi final.)"

I would (and do) use an unbalanced line for e dipole (72 ohms) and balanced for the lded dipole (300 ohms). Of course I also e baluns! There have been many discussions lative to various types of transmission lines be used with a pi final, but little resolution the problem. Characteristic impedance rmination is the important factor in the choice any transmission line. Most well designed pi tworks will cover a large range of impedances hen both inductance and capacity can be ljusted for proper match. However, the pi rcuit (L or Z) does *not* guarantee maximum ower transfer unless the antenna itself is *operly* terminated.

813 GG Linear

Why, we do not know, but we have recently ceived numerous requests for a circuit of an 3 in grounded-grid linear (class B). We have t designed and/or built one of these and ive furnished purely "guestimate" information hich we cannot guarantee. If any of you *have* signed and built such a final which works ing an 813, how about letting us have full formation so we can pass it on and make a w SSB boys happy?

Question of the Month

"Can you give me a diagram of a receiver atching device which will match my receiver's put impedance of 300 ohms to a 72 ohm axial feeder and be effective on 10 meters?"

See Figure 2. The unit is adjusted by screw- g the coil slug (in or out) and tuning the riable midget condenser for maximum S ading on a *steady* 10 meter signal. Shorting it the unit will show the effectiveness of the atch. Coverage for other bands is possible by anging coil L-1 and substituting one wound r the desired band. Coil winding information usually supplied with the *National* form.

Thirty

We wish to thank those readers who wrote in ommenting on the article in the May mobile sue of *CQ* on noise elimination. It seems that e helped a large number of VW owners who ave "gone mobile." We are glad! We hope ou will continue to use HAM CLINIC'S serv- e and we will do our best to assist you with our technical problems. We are *not* "world otshots" but we are sincere in our effort to o the best we can. Again, if you have some chnical tip or information which would help nother fellow ham, send it to us for publica- on.

73, Chuck, W6QLV

See, Write, Call or Wire —
Dick Brainerd, K8IXN Fred Ohman, W8FAT
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FOR 1¼, 2 & 6M
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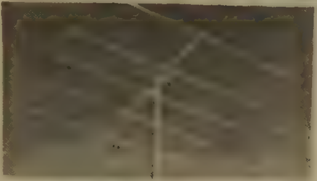


6 METER
6 ELEMENT
$15.95

6 METER, 8 ELEMENT BEAM: $26.95

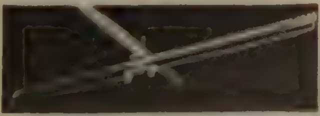
The hy-gain 6-meter beams are adjustable for max. gain over the entire band, from our instructions. No further tuning necessary. Calibration Chart supplied with each instruction manual. Factory preassembled, these beams feature heavy wall ½" aluminum elements of 6061T6 alloy and 1¼" diameter aluminum booms. May be stacked for additional gain. Stacking Bars available at $3.95 extra.

New, precalibrated (GAMMAXIAL) Gamma Match assembly with coaxially formed reactance cancelling capacitor built in, makes possible for the first time a perfect 1:1 SWR. Coax connector for 52 ohm feed incl. Developed exclusively by hy-gain for use in the hy-gain single-band beams.

2 METER
5 ELEMENT
$6.95

1¼ METER, 10 ELEMENT BEAM: $9.95
2 METER, 10 ELEMENT BEAM: $10.95

The hy-gain 1¼ & 2 Meter Beams are factory preassembled; elements snap into position for immediate use. Features ⅜" aluminum elements of 6061T6 alloy & 1" diameter aluminum booms. Easy to put up and into operation, these beams may be stacked for additional gain. Stacking bars available at $3.95 extra.



The 1¼ & 2 meter beams incorporate the Folded Ratio Dipole with nominal impedance of 450 ohms. A 1:1 SWR with 450 ohm open wire transmission lines for max. efficiency at VHF frequencies may be realized.

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For further information, check number 6 on page 126.

Advertisement

Radio Bokshoop

A little over a year ago the Radio Booksho ran its first ad in CQ featuring Electronics a Radio Engineering by Terman, Electrical E gineers Handbook by McIlwain and Cybern tics by Wiener. The first two books were s lected as being two of the most importa text books for anyone working in electronic the third was a joke since it was loaded wi pretty heavy calculus for the normal amateu Cybernetics sold like hot cakes.

Since that time we have tried to keep small but potent list of books available, eac of them carefully selected to be of top valu to the ham with a minimum of engineerin background. You could at any time start the top of our list and buy until you ran ou of money and be sure of getting good book which would be important to you. We hav been careful to avoid repetition of subjec and for the most part each book covers a diffe ent subject.

Of late we have gone into a few produc as well as books. Like the miniature call lette plates for 75¢ which can be attached to you license plate or your son's bicycle to let hi reflect a bit in the glory of the old man. Som fellows are using them on their mail box, etc We have been unable to get the mfr to pro vide a "0" with these though.

Then there is the QSL album for WAS fo $3.50. This is being put out by W2SKE and i a real honey. There are places in the book fo all 48 cards and it makes a real nice conversa tion piece when you have visitors to the shac . . . really dresses things up.

The best selling books, and rightly so, hav been the Radio Handbook by Bill Orr at $7.5 This is one of the best buys ever to turn up fo the ham, a really great book. Another re markable seller is "Antennas" by Kraus, W8 JK. This is a pretty technical book. A bette bet would probably be the Beam Antenn Handbook by Bill Orr W6SAI for $2.70.

The newest book in our list is #32, the RC Radiotron Designers Handbook which sells fo only $7.50. Considering that it runs for 150 pages you are getting quite a per-pound bu This volume covers almost everything and w give you about a year of interesting readin The index alone runs 52 pages! Isn't it real about time that you bought a book which w give you answers to some of your question

BOKSHOOP

1 Electronics & Radio Eng. by Terman
1078 entertaining educational pages, this one is a gotta for every hamshack, too bad it's so expensive $13.50

2 E. E. Handbook by McIlwain
1618 pages, a better buy per pound than Terman, but it gives just formulas, tables & circuits, not so much explanation $10.00

3 Cybrenetics by Weiner
No reason to buy this one except it is a classic & the title is visible from 10 feet. Confusing $3.50

4 Electronics Manual for Radio Engineers
You'll never find twice as much book for half the price, guaranteed rouser . . almost a corker $14.00

5 Antennas by Kraus (W8JK)
Handy, if you are trying to understand antennas $10.00

7 SOS At Midnight by K6ATX
Ham adventure book, dunno why we advertise it here $2.75

9 License Q & A Manual
Newest dope on commercial licenses, become a professional ham $6.00

11 Radio Handbook by W6SAI
Another guaranteed rouser, great book, hundreds of circuits, a hamshack gotta, this is the book $7.50

13 Reference Data, 4th Edition
[illegible] pages of rare data, data, data . facts $6.00

16 Ham Register by W3VKD
Honest, no shack is complete without this, real interesting $5.00

20 RTTY Handbook by W2JTP
A lot of ham Teletype, supply running out, very popular $3.00

21 VHF Handbook by W6QKI.
Covers just about every aspect of VHF $2.95

22 Beam Antenna Handbook by W6SAI.
Practical, includes both theory and construction $2.70

23 Novice Handbook by W6TNS.
Receiver, transmitter and antenna theory and construction for the Novice and Technician. Terrific $2.85

24 Better Shortwave Reception by W6SAI.
Fine handbook for SWL, eg. long needed $2.85

25 Mathematics for Electricians & Radiomen by Cooke.
This is the standard text book in this field $5.50

26 Surplus Radio Conversion Manual I.
BC-221, 342, 312, 348, 412, 645, 946, 1068A, SCR 274 522, TBY, PE 103 etc $2.50

27 Surplus Radio Conversion Manual II.
BC-454-459 Xmtr-Rcvrs, APS-13, ARC-5 VHF Xmtr-Rcvr BC-357, 946B, 375, TA-12B, ART-13, AVT-112A, GO LM etc $2.50

28 Television Interference by Rand.
Latest complete dope on licking TVI $1.75

29 QSL Album for WAS by Hanover Products.
Mount your 48 cards for display $3.50

30 Miniature Call Letter License Plate.
No Ø available, sorry 75¢

31 Western Radio Amateur
Years subscription only $2.00

- -

Permission granted to use separate paper if you want.

OK fellas, send me postpaid the items circled, and get a move on.

1 2 3 4 5 9 7 11 13 16 20
21 22 23 24 25 26 27 28 29 30 31

Name.. Call
Address ....
City.... ....Zone ..... State

Cash, check or money order enclosed, of course.
N.Y.C.'ers add 3% for Wagner

Radio Bokshoop

1379 East 15th St., Brooklyn 30, N. Y.
Patronize Ham Industry, bub.

PRICES REDUCED!

Amplifier Easily converted to 6 watt mobile P.A. Complete with 3 6V6 and 12 Volt dynamotor (250 volt)—50 MA) output Exc. **$3.45**
2 for $6.95

ARB RCA SIX TUBE all purpose super het Receiver covering 195 Kc to 9000 Kc including weather, lighthouse, aircraft radio range broadcast, marine and amateur 160 meter, 80 meter 75 meter and 40 meter, with tubes and 24 volt dyno. Exc. **$17.95**

See June 1958 "CQ" for conversion

BC-659 FM Receiver-transmitter, xtal controlled, two channels, freq range 27-38.9 Mc. 13 tubes, built-in speaker, dual meter for testing filament and plate circuits.
Exc. **$6.95**
New $12.95

BC603. Ten Channel Push-Button on continuous tuning FM Receiver 20 to 27 Mc. complete with tubes, speaker, squelch circuit
Brand New $12.95
Exc. $6.95
Used $4.95
Ideal for spare parts
12 Volt Dyns for above receivers Exc $2.95

BC 603. Same as above except to 20 to 27 Mc $6.95
12 Volt Dynamotor for above receivers. Exc $2.95 ea.

$45.00 Hi-Fi Headset

Uses annular grooved plastic fibre cones with voice coils as in speakers, and rubber ear pads to obtain spacing for correct acoustical load. GIVES FINEST MUSIC REPRODUCTIONS! Input 300 Ohms per unit or 600 Ohms when wire series
BRAND NEW **$9.95**
Less Headband **$6.95**

BC669. Six Channel Crystal Controlled, 50 Watt Radio Telephone, 1600 to 4500 KC. Ideal for boats or land station, less power supply.
Used **$59.50**

BC453 Command Receiver 190 KC 550 KC complete with tubes and dynamotor.
Exc. **$12.95**

WRITE FOR NEW BULLETIN

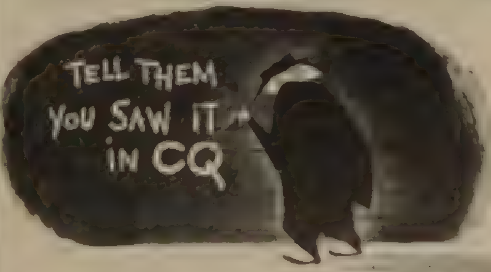
Quantity Prices

25% Deposit required with orders

R W ELECTRONICS

2430 So. Michigan Ave., Chicago 16, Ill   Dept. CQ
Phone: CAlumet 5-1281

For further information, check number 32 on page 126.



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RADIO OPERATOR'S LICENSE
Q AND A MANUAL

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6th EDITION
up to the minute

The BEST book for
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The only book with complete discussion of answers to every technical question in the FCC Study Guide. Makes it very easy to answer multiple choice questions.
Used by leading schools and industry.
Only $6.60 at jobbers, bookstores or direct from:

JOHN F. RIDER PUBLISHER, INC.
116 West 14th Street, New York 11, N. Y.

Engineer Wanted

E. E., prefer young man, several years experience electronics or communications. Duties will be activation and testing of electronic equipment on U. S. Navy ships (new construction).

Bath Iron Works Corp., Bath, Maine

Lighted Globe

When we first introduced the world globe some two years ago we found that there were a few malcontents who wanted to know if they could put a light in it. Ridiculous, said we, how do you expect to put a light bulb in a plastic globe? So, now we have it. $24.95, including the light bulb and a year's subscription to CQ. What a bargain! These globes sell for up to $25.00 in the stores without the CQ subscription. And they are guaranteed, man.

HAM ALARM *[from page 51]*

signal is achieved with the plates of C_1 wide open, L_1 has too much inductance. Screw the slug counterclockwise, or remove a few turns from the coil. When properly adjusted, resonance of the L_1-C_1 circuit will occur with the plates of C_1 about 50% meshed. After the input circuit has been tuned up, a similar adjustment for the L_2-C_2 combination is in order.

Remove the headphones from J_1. Whistling into the mike should now cause the relay to close, after a short delay occasioned by the time constant of the CH_4-C_8 circuit. You can now give the Alarm a final test by checking it out with the signal of another local station.

It is possible that the contact spacing and spring tension on the relay may have to be reset. Reducing the spring tension will increase the relay's sensitivity. Likewise, the closer the armature is to the pole piece, when the relay is not energized, the greater will be the sensitivity. On the other hand, increasing the spring tension and armature to pole piece spacing will reduce the sensitivity. Optimum performance will be achieved when the relay is working at a point where a low power station a couple of miles away is just able to set off the Alarm. Selectivity of the unit is broad enough so that a local station several kc off the calling frequency will still be able to activate the relay.

If more than two amateurs in an area decide to use Ham Alarms, all units will respond whenever a call is made. This effect can be mitigated by assigning a special ring to each station, as is done on a party telephone line. Short letters of the Morse alphabet (for example: a, n, u, d and t) may be employed for this purpose. The calling station can then whistle the letter of the particular station he wants to make contact with. An oral identification should always be included with such transmissions.

Even though there may be no hams in your immediate locality, you can still make use of a Ham Alarm. By omitting the CH_4-C_8 filter circuit, and by adjusting RY_1 for maximum sensitivity, you'll be surprised at the small amount of signal required to actuate the device. Any well modulated carrier of the S9 to S9 plus variety will operate the relay. Thus, the BC-357 can be used to monitor a state net frequency for daytime activity or to detect the presence of mobiles passing through your neighborhood. The unit can also be employed to keep tabs on a band which has relatively little activity. For example, if you like 160 meters, but only find an occasional station on the air, you can allow the Ham Alarm to take over the job of informing you whenever a good workable signal is coming through.

Whether you live in a built up metropolitan area, or in the wide open spaces, the Ham Alarm will prove to be a truly useful addition to your shack. ■

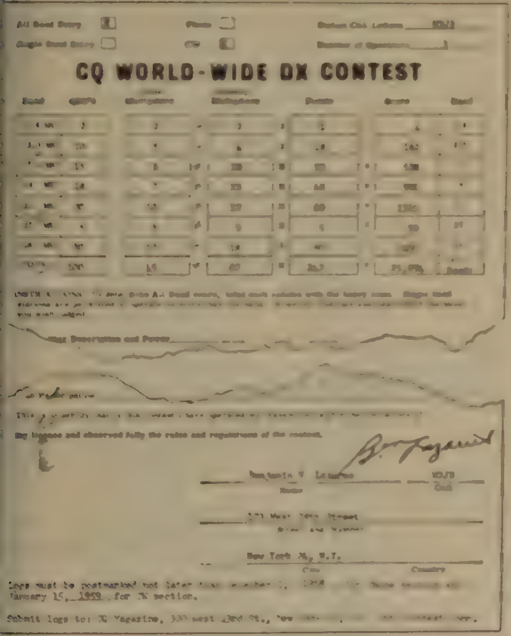
RULES *[from page 32]*

2. To the station having the highest All Band score (more than one band) in the following areas:
   a. Each call area of the U.S.A.
   b. Each call area of Australia and Canada.
   c. All other countries.

XI. SPECIAL AWARDS:

1. A cup will be awarded to the highest scoring Single Operator, All Band, Phone Station in the world. (*Donated by W2SKE*)
2. A cup will be awarded to the highest scoring Single Operator, All Band, CW Station in the world. (*Donated by W2IOP*)
3. A cup will be awarded to the highest scoring Multi-operator, All Band Phone Station in the world. (*Donated by K2AAA*)
4. A cup will be awarded to the highest scoring Multi-operator, All Band CW Station in the world. (*Donated by K2GL*)
5. A plaque will be awarded to the affiliated DX Club submitting the highest aggregate score of the scores submitted by its members. (*Donated by CQ*)

[*Continued on page 112*]


CQ WORLD-WIDE DX CONTEST

This is a typical contest report form. Note pledge which must be signed.

MOSLEY TRAPMASTER
Model TA-33
for 10, 15 and 20

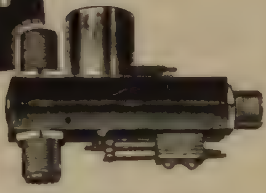
Aluminum Elements AND Boom

STRONG!

No boom braces needed!
No noticeable sag!

Mosley Electronics, Inc.
8622 St. Charles Rock Road • St. Louis 14, Mo.

For further information, check number 6 on page 126.



SILENT Coaxial Relay

MODEL
DKC-GE

TESTED AND PROVEN
BY AMATEURS AND INDUSTRIALS

New magnet principle makes high-contact pressures possible—gives a new concept of low-contact resistance. Free of AC hum or chatter available with special receiver protecting connector and heavy-duty external SPDT switch.

One-million operations completed in life test with no apparent deterioration. Power consumption, AC models approx four watts; DC models three watts. V.S.W.R. at 150 mc 1.1 and 1.2 at 300 mc. Coil voltages: AC 6, 12, 24, 110 and 220. DC 6, 12, 24, 48, 110 and 220. Special coil voltages available. GUARANTEED! Fully backed by factory warranty for unit replacement.

Price $10.90 to $15.45

DOUBLE MALE CONNECTOR (DKF2) for mounting relay directly onto output of transmitter $1.45. See your local electronic parts dealer or write direct for complete specifications.

DOW KEY CO., INC.
THIEF RIVER FALLS, MINNESOTA

For further information, check number 34 on page 126.

POWER! POWER! POWER!
TRANSISTORIZED
D.C. TO D.C. POWER CONVERSION

featuring

- Maximum Efficiency
- Physical Ruggedness
- No Moving Parts
- Small, Lightweight
- 21 Stock Models in all voltage & current ratings
- Priced from $27.50 Amateur Net

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TYPICAL CONSTRUCTION (CASE REMOVED)

Transistorized power supplies are ideal for use with mobile, and airborne electronic equipment. Being independent of the use of vibrators and tubes, power converter life is limited only by the basic components themselves and may be 50,000 hours or more, under usual conditions.

They are inherently self-protecting against overload and their high efficiencies (75-90%) and small physical size and weight make them a must for all applications. See them at your dealers today.

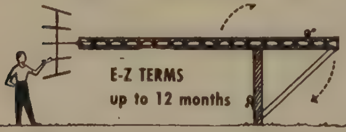
ELECTRONICS UNLIMITED
MERLIN TRANSISTOR PRODUCTS DIV.
31 Maple Ave. Saratoga Springs, N. Y.

For further information, check number 35 on page 126.

BEST towers COST LESS!

Protect your beam and rotor investment by sensibly supporting them with strong, heavy walled, durable STEEL . . . the best cost you less in the long run. Be proud! Own an E-Z WAY!

- Crank up or down—1 minute!
- Tilts over for easy access to beam!
- Brute steel in attractive design!
- 30 types from which to choose!
- No material lost in moving . . . no guys, no concrete!



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Send me your FREE catalogue on the following towers:
☐ Broadcast ☐ Television
☐ Ham Radio ☐ Two-Way Communication
I am interested in a tower .... ft. high.
I will use a .... antenna.
(State type and model)
Type of Rotor ....
Name ....
Address ....
City .... State ......

E-Z WAY TOWERS, INC.
P. O. BOX 5491 - TAMPA, FLA.

For further information, check number 36 on page 126.

RULES *[from page 111]*

a. For a club to enter, an officer of the club must submit a list of its participating members and their scores.

b. This list may include scores of Single operator and Multi-operator stations; both Phone and CW.

c. Stations that are members of a competing club therefore must indicate this fact on their report forms.

6. At the request of the donors, previous winners are not eligible for the 1958 awards. In other words the cups cannot be won more than once by the same station. This however, does not apply to the plaque award.
7. Also such special or additional awards as the Committee shall choose to make. In countries or sections where the returns justify, second and even third place certificates may be awarded.

XII. OPERATING SUGGESTIONS:

1. Foreign amateurs; remember; scores are based on the greatest number of Countries and Zones as well as stations worked. Therefore do not concentrate on working only U.S. stations. This is a world wide competition.
2. DX stations; it is recommended that you give the call of the station you are working at the end of each transmission. This will prevent confusion.
3. Overseas phone operators; it is strongly recommended that you indicate which portion of the phone band, American or foreign, you intend to cover.
4. CW stations; calling on or off the frequency of the DX station must be left up to the individual operator. This is generally governed by the technique of operators at the DX station.

XIII. LOG INSTRUCTIONS:

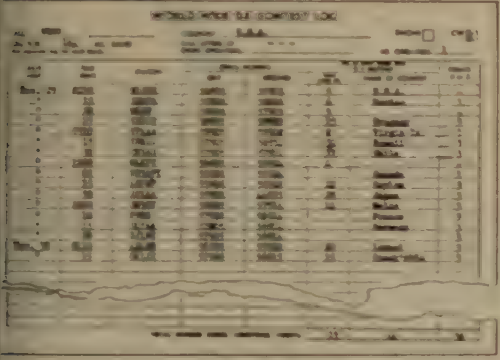
1. In keeping log, fill in Zone number and Country, **ONLY FIRST TIME** it is contacted on each band.
2. Use a separate sheet for each band and a final tally sheet or report form.
3. Keep all times in **GMT.**
4. All contestants are expected to compute their scores. Logs should be checked for contact

[Continued on page 113]

ULES *[from preceding page]*

duplications and proper point credit before they are submitted.

5. Make sure name and address is clearly noted on each log. Print or type.
6. Each contestant must sign a pledge that all rules and regulations have been observed. Note sample contest report form.
7. If official log forms are not available, it is hoped that a duplicate form as illustrated will be used. The size is 8½" x 11" with 52 contacts to the page.
8. Copies of the Zone and Country list and log report forms are available from CQ, address listed below. Send a self addressed stamped envelope, or in the case of overseas stations, IRC coupons. Make sure to include sufficient postage, state how many sheets are needed and allow sufficient time for mailing.



A typical log sheet

XIV. RULE CHANGES:

The minimum operating time has been increased to 12 hours for single operators and 24 hours for multi-operated stations. This is a contest, not a leisurely weekend at your hobby.

The Committee is also going to be more critical regarding the observations of the rules and the keeping and scoring of your logs.

XV. DEADLINE:

All logs must be postmarked NO LATER than December 1, 1958 for the Phone Section and January 15, 1959 for the CW Section.

Send all logs directly to:

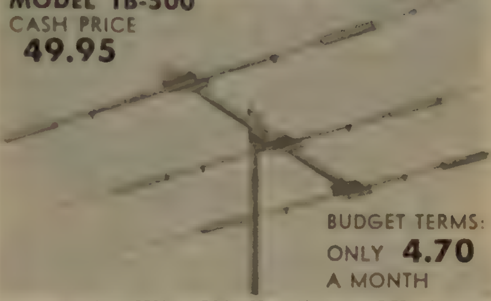
CQ Magazine
300 West 43rd St.,
New York 36, N. Y.
Att: Contest Committee

IF YOU RUN 500 WATTS OR LESS, HERE'S THE TRIBANDER FOR YOU!

10 DAYS FREE TRIAL!

MODEL TB-500
CASH PRICE
49.95

BUDGET TERMS:
ONLY 4.70
A MONTH



10-15-20 METER — FORMED ALUMINUM FITTINGS
MAXIMUM SWR 1.65:1 ONE FEED LINE

GUARANTEED FOR 1 FULL YEAR

TRY THE TB-500 BEFORE YOU BUY IT—
If fully satisfied, pay $4.70 within 10 days and $4.70 per month for 11 months.

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ORDER DIRECT FROM HORNET

WRITE FOR FREE ILLUSTRATED CATALOG

THE BEAM WITH A STING
HORNET Antenna Products Co.
P.O. BOX 808 • DUNCAN, OKLA.

For further information, check number 37 on page 126.

GOOD BUYS — ALL NEW

CATHODE RAY TUBES Boxed for shipment
5BP1 ... $1.75 5JP2 $3.45 5GP1 5BP1XXX $2.45
3FP7 $1.00 ppd. in U S 5FP7 . $1.29 ppd in U S

FILTER CHOKES All are potted types
10 hy 500 mils. 100 ohm: 2000 volt RMS [illegible] $6.95
Dual 2.2 hy 550 mils: 27 ohm: 2.5 KV test 40 lbs $5.95
3 hy 400 mils: 34 ohm. 1780 v RMS 10 lbs $2.45 3/$5.95
10 hy 150 mils. 160 210 ohm .... 5 lbs $1.69 2/$2.95
15 hy 100 mils. 240 ohm: 1500 v RMS 3 lbs $1.19 2/$1.95
4 hy 60 mils: 412 ohm. 2400 V test........... 1 lb 59c 2/95c

TRANSFORMERS All have 115 volt, 60 cycle primaries
800 vct/175 mils: 5 v/3a. 2.5 v/1.75 a; 6.3 v/2.5 a; 6.3 v/2 [illegible] a
80 volt bias tap [illegible] 10 lbs $[illegible]
700 vct 120 mils. 5/3: 6.3/4.4. 6.3 0.6: HS 10 lbs $2.95
750 vct/240 mils. 5/3: 6.3/11.1: 17/1.2: HS 14 lbs $3.45
Scope special . . . 6.3 v/1.85 a; 6.3 v/0.6 a 700 vct 30 mils; 525 v/5 mils. 2.5 v/1.75 a: 6.3 v 0.6 a 2000 and 3500 volt ins. upright shielded double shell 5 lbs $3.45
1000 v/30 mils. 6.3 v/0.5 a; potted 7 lbs $1.69 2/$2.95
Dual 120 vct/10 mils. cylindrical potted 1 lb 95c 3/$2.45
34 v/674 mils: tapped at 12 volts; potted [illegible] 95c
2.5/10. 6.3 vct/5.5. 6.3 vct/1: 1000 volt ins 13 lbs $2.29

MISCELLANEOUS VALUES These are worth examining carefully
Triple 20 mfd 400 DCWV octal elect cap 4 oz 2/95c
1200 mfd 3 DCWV, can type electrolytic [illegible] 6/95c
456 KC IFs: single air trimmed, ceramic [illegible] 2/95c
6 pole, 3 position phenolic rotary switch 3 oz 4/95c
"Super Pro" table rack cabinets (black/grey) [illegible] lbs $7.95
" black fluted knob with crank, ¼" shaft [illegible] 3/95c
BC 606 control boxes with cable hardware 3 lbs 3/95c

VACUUM TUBES — All are in original boxes
701-A ..... $3.95 a pair 725 A $1.69 WL417-A . $1.69
717-A, 2X2, 1642, 958 A 35c each, $2.95 a dozen

WRITE FOR OUR NEW 1958 GOVERNMENT SURPLUS BARGAIN BULLETIN

Send adequate postage We refund any overage

All prices are FOB Sacramento

JOE PALMER

P. O. BOX 6188 CCC SACRAMENTO, CALIF.

For further information, check number 38 on page 126.

114 LBS. WIND LOAD

computed in accordance
with sec. TR-116—EIA
Standards (formerly RMA)

Mosley Electronics, Inc.

8622 St. Charles Rock Road • St. Louis 14, Mo.

For further information check number 6 on page 126.

ARE YOU MOVING?

If you expect to move, and IF you know your new address now, and IF you don't want to miss any issue of CQ here are three things you can do right now!

1. Tear your name and address label off the wrapper of this issue and paste it in this box right over these words, or make a complete and accurate copy of your old address label.
2. Print your name and NEW post office address in the lines below:

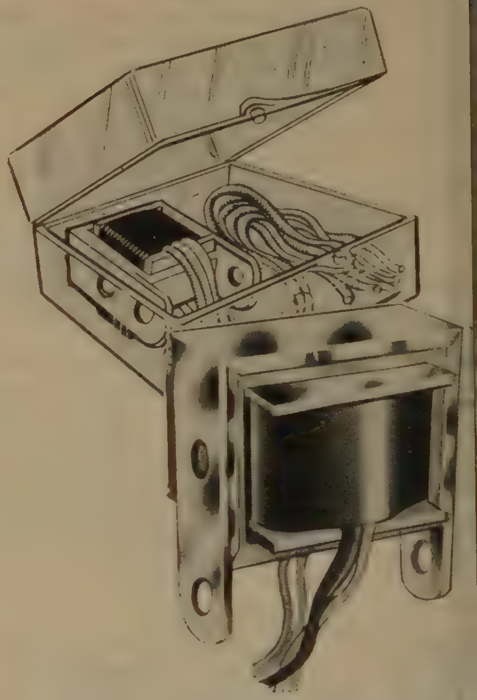
(Name)

(Number and street—or Route)

(City) (Zone) (State)

3. Cut out this whole box and mail it to: CQ Magazine, 300 W. 43 St., New York 36, N. Y.

SEMICONDUCTORS [*from page 67*]



An interesting new line of transistor transformers is available from Lafayette Radio. Price? Only 79 cents each! See text for more details.

are offering a thermistor kit for experimente
The kit contains two glass probes, three beac
two disc, three rods and two washer type
Each thermistor is separately packaged in
own matchbook cover and complete perforr
ance data is imprinted on the cover. A fr
catalog sheet describes these units fully. Tl
price of the kit is $19.95 or they may be pu
chased separately.

Mr. Seymour Schwarts, President of Transi
tor Applications, Inc., 50 Broad St. Bosto
Mass. announces that contract NObsr-752
was recently awarded their company by t
Department of the Navy, Bureau of Ships, f

NEW LOW PRICES ON *Transistorized* POWER SUPPLIES

Newly developed, highly efficient transistor operated power supplies capable of furnishing power for all types of mobile communications equipment. Available in two standard models as listed below with other voltage and power ratings on special order.

Input: Either 6, or 12 V.D.C. (Please specify).
Output: 150 V.D.C. and 300 V.D.C. (simultaneously) at total of 150 M.A. from a full wave silicon bridge rectifier at a constant 45 watt load. Loads up to 90 watts on 20% intermittent duty cycle.
Net Price $39.95 each

Input: Either 6, or 12 V.D.C. (Please specify).
Output: 225 V.D.C. and 450 V.D.C. (simultaneously) at total of 150 M.A. from a full wave silicon bridge rectifier at a constant load of 70 watts. Loads up to 135 watts on 20% intermittent duty cycle.
Net Price $55.00 each

Boulevard ELECTRONICS, INC.
1229 WEST WASHINGTON BOULEVARD CHICAGO 7, ILLINOIS

For further information, check number 39 on page 126.

he compilation and publishing of a Semi-onductor Selected Circuits Handbook. The urpose of this manual will be to assist better ngineering practice in the design and reliability f military equipment, as well as to standardize emiconductor engineering presentations. In-ustrial concerns, government organizations, ducational institutions and individuals work-ng in the transistor circuit field are invited to ubmit circuits for the handbook. Contributors ill receive full recognition by including the ame of their organization, as well as the riginator, with each circuit. It is planned that his manual will become a permanent source f circuit reference, design procedure, as well s a basis for standardization of the semicon-ductor circuit symbols.

73, Don, /W6TNS

X [*from page 64*]

B6BH—Chuck Singletary, Box 653 USPO 06-50000, Canton Island, Phoenix Group, South Pacific.
PJ5CB—QSL to G3EIX.
V0WB (Rhodes)—John W. Lowther, USCG Courier, APO 223, New York, N. Y.
V0WE (Rhodes)—Henry B. Wood, USCG Courier, APO 223, New York, N. Y.
V0WK (Crete)—Gleneth B. Berry, 6938 RSM, APO 291, New York, N. Y.
SV0WN (Crete)—Clyde S. Geist, 6390 RGM USAF, APO 291, New York, N. Y.
V0WT (Crete)—MARS 6938 RSM, APO 291, New York, N. Y.
V0WZ (Crete)—Ward E. McNeal Jr., 6930 RGM USAF, APO 291, New York, N. Y.
A1KAE (all)—QSL via Box N-88, Moscow.
VK4AL—Ev Brown, Clontarf Beach P O, Redcliffe, Queensland, Australia.
K9RR—Bob Hooper, Box 56, Port Moresby, Papua Territory.
S9AJ—APL Signal SQDN, Aden.
EODOT—QSL to W6DOT.
EOUUE—QSL to W0UUE, Fred C. Holzapfel, 5001 Olson Hwy., Minneapolis 22, Minn.
ZS8R—Archie Parkhouse, Leribe, Basutoland
K2AN—P O Box 736, Kuwait.

See you next month! 73, Don, W4KVX

The Ohio Valley DX Bulletins

If you would like much faster and more comprehensive DX news and articles than space in this column can permit, we suggest you try the Ohio Valley DX Bulletins, edited and published by W4KVX. Published weekly, for a total of 40 or more issues a year, it costs but $5 a year via second class mail, $6 via first class, and $7.50 air mail to U. S., Canada, and Mexico. Foreign rates are $4 plus postage. Write W4KVX (address at the head of the DX column) for further details or for your membership to this excellent service. Sample copies may be had for the asking.

The all NEW MORADCO

MOBILE TRIO

NOW the MB-565 Transmitter and the MB-6 Receiver combine with the New RTV-630 12 volt DC power supply to form a superb team for crisp DX and local contacts.

MB-565 TRANSMITTER $249.50
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For more information on the new, brilliant-performing Moradco Transmitter and Receiver as well as accessory items, contact your nearest dealer, or write for new, illustrated brochure.

MORROW
RADIO MANUFACTURING CO.
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For further information, check number 40 on page 126.

YOUR HAM SHACK IS NOT COMPLETE WITHOUT THIS IMPORTANT LINK . . . DAROD HI FI PHONE PATCH

The DAROD HI FI Phone Patch is the Ham's answer to a distortionless Phone Patch. With this versatile piece of Ham equipment as part of your rig, people actually seem to be right in your shack . . . the quality is so fine. The DAROD PP-100 Phone Patch is a quality engineered piece of gear for the Ham.

STANDARD MODEL only $10.95
DELUXE MODEL only $13.95
AVAILABLE AT ALL LEADING HAM SUPPLY CENTERS.

1. C. D. work
2. Disaster relief
3. Handling Phone calls for other Hams
4. Handling Phone calls for G.I.s away from home

SOME OF THE ADVANTAGES OF DAROD PHONE PATCH

1. Perfect line match
2. If signal is barely audible on phone it is readable through a DAROD PHONE PATCH
3. It costs more to make one yourself and you won't have such a perfect patch
4. No switching from transmit to receive, automatically in on both operations
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6. We maintain the DAROD PHONE PATCH is the best patch on the market

If Unavailable At Your Dealer's Mail Coupon

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54 West First St., Mount Vernon, N. Y.
☐ I enclose $10.95 send standard model prepaid
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☐ I enclose $1. deposit send standard model COD
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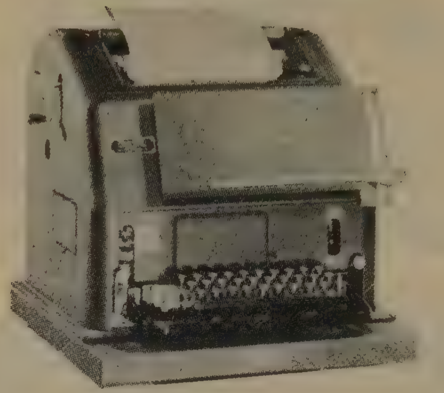
NAME
ADDRESS
CITY, ZONE, STATE

For further information, check number 41 on page 126.

TELETYPEWRITERS



Model 15 Send/Receive TELETYPE equipped with pulling magnet selectors, series motors. Completely refinished and overhauled and ready to install. $350.00

Same as above but equipped with synchronous motor $375.00

Spare parts available with minimum orders of $25.00

For Amateurs only, state call with order.

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For further information, check number 42 on page 126.

AMAZING NEW VIBROPLEX

Super DeLuxe
WITH ADJUSTABLE MAIN SPRING AND OTHER GREAT FEATURES

24-K GOLD-PLATED BASE TOP

PRESENTATION MODEL $29.95
Vibroplex presents the first really speed control key. An adjustable main spring permits operator to send slower or faster as desired. No more muddy signals . . . no sacrifice of signal quality. Suits any hand or any style of sending. Free of arm tension. Sends easily as pressing a button. Praised by operators and beginners alike. Try this new Vibroplex key! You'll be delighted. Other new popular Vibroplex keys from $15.95 up. At your dealer or
THE VIBROPLEX CO., INC. 833 Broadway, N. Y. 3, N. Y.

ARE YOU MOVING?

If you expect to move, and IF you know your new address now, and IF you don't want to miss any issue of CQ here are three things you can do right now!

1. Tear your name and address label off the wrapper of this issue and paste it in this box right over these words, or make a complete and accurate copy of your old address label.
2. Print your name and NEW post office address in the lines below:

(Name)

(Number and street—or Route)

(City) (Zone) (State)

3. Cut out this whole box and mail it to: CQ Magazine, 300 W. 43 St., New York 36, N. Y.

CONTEST CALENDAR *[from page 76]*

received and each new district worked. U a separate sheet for each band. Rules in tails were published in the July Calendar.

Your logs must reach the N.Z.A.R.T. Cc test Committee, Box 489, Wellington, N Zealand, not later than January 23, 1959.

PERUANO

This is a Panamerican contest and activ of course is limited to the American contine only. Altho last year's operation was mos on phone, more CW activity is promised t year. So this offers a good opportunity to fatt up your "WAA" total.

Contest starts at 1200 EST on Saturday a ends at 2400 EST on Sunday. Rules in det in last month's calendar.

Logs should be mailed within 20 days Radio Club Peruano. Att: Pres. Comision Cc cursos, Casilla 538, Lima, Peru.

CQ WW DX

See page 32 this issue for complete rul No changes from last year's rules with e ception of VIII. Scoring: #6 #7. The minimu operating time has been increased to 12 a 24 hours respectively. Since the contest e tends over a 48 hour period, we feel justifi in making this change.

ARRL SS

This one has been around a long time, nc in its 25th year, so needs no introductio Altho strictly a home affair, the activity terrific. Over 2000 entries were received in t last one. See "you know what magazine" f details.

Ed. Comments

All certificates for the 1957 World Wide a fair have been mailed, along with a comple list of scores, rules for the 1958 contest a sample log and report form. As a suggestion you certificate winners: why don't you mail t score and rule sheets to some overseas frie after you have absorbed the contents. Esp cially to someone in those rare spots.

Recently I had the pleasure of being inte viewed by Bill Leonard, W2SKE on his Voi of America program. Naturally we talked abo the CQ World Wide DX Contest and cover the results of the CW section. The V.O.A. pr gram is on every Tuesday at 2100 GMT. can be picked up almost anywhere in t world since a flock of different frequencies a used. Wonder if any of you fellows happen to be tuned in.

Incidentally a very interesting article "ham radio" and contests appeared in the Ju 30th issue of Sports Illustrated magazine. T to dig up a copy, its worthwhile. That's all f this time.

73, Frank, W1W

"OHIO 24" *[from page 27]*

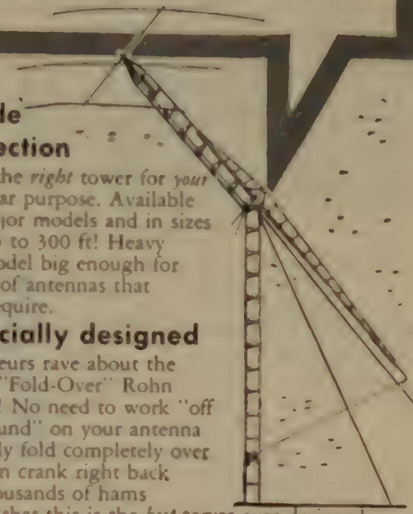
of the true amateur spirit which prevails among the members of our fraternity.

The headquarters station, K8EEN (Mount Vernon Amateur Radio Club station) was located in the rally headquarters room on the second floor of the Curtis Hotel in downtown Mount Vernon. The station equipment used belongs to the club members, because as yet the club has no equipment of its own. (A club room is being prepared at present, and when completed equipment will be the next order of business.) The rig consisted of a World Radio Laboratory 500-B transmitter, a Hammarlund HQ-129X receiver, and a half wave dipole antenna located on the hotel roof. The frequency used was 3860 kc. (plus or minus depending on conditions) with an alternate 80 meter cw frequency and an alternate 40 meter frequency. Fortunately the alternate frequencies did not have to be used, in spite of terrific QRM and QRN.

Unfortunately the first schedules which were on Friday morning were not too successful from K8EEN. We had planned for such problems by having an alternate base station in Mount Vernon. This station, W8NTP, had to do most of the traffic handling Friday morning. We were sure that conditions would be no better during the schedules to come, so we must remedy the situation. The antenna would not take the rf, so I was feeling a little uneasy, because the antenna had been my baby. We checked to see if the coax was shorted or open, and it wasn't. Some decided the flat-top was not the correct length; I argued it was. Finally after many trips to the roof (W8PEN, W8OPU, and I became very familiar with the topography of the roof) we arrived at the solution. The flat-top had to be placed very near the roof (which was flat) with the ends folded, making them pass through a small tv antenna farm. With the aid of a forward and reflected power meter we discovered that the formula for the length of a half wave dipole is fine in free space, but does not take into consideration the obstacles encountered on a hotel roof. Though the antenna was the correct physical length (according to formula), the close proximity to the roof (2 to 4 feet in most places) and to the tv antenna farm made it appear too long. We shortened the antenna 4 feet, straightened out the ends, and dropped one end over the side of the hotel. Test runs with stations throughout the state indicated we now were boring through the 75 meter rat race very well. The Friday evening schedules and all succeeding ones were met with little difficulty except the usual 75 meter QRM and QRN.

The event involved a lot of work (and problems), but a very gratifying experience. We have learned a lot in the past two events; maybe next year the operation will be even more efficient.

AMATEURS find ROHN TOWERS *BEST* because...



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—just the *right* tower for *your* particular purpose. Available in 4 major models and in sizes from 45 to 300 ft! Heavy duty model big enough for biggest of antennas that hams require.
- **specially designed**
—amateurs rave about the special "Fold-Over" Rohn Towers! No need to work "off the ground" on your antenna —merely fold completely over and then crank right back up. Thousands of hams acclaim that this is the *best* tower ever designed for them!
- **hot dipped galvanized**
—permanent, no-maintenance finish—stays bright and new.
- **superior construction**
—these towers rated to handle the equivalent of about any load you require—made by precision machines—fully tested—easily shipped and installed. Thousands in use coast-to-coast.

FREE CATALOG and name of nearest source of supply sent gladly!

WRITE today—or see your local ROHN outlet.

ROHN *Manufacturing Company*
116 Limestone, Bellevue, Peoria, Ill.
"Largest Exclusive Manufacturer of TV-Communications Towers"

For further information, check number 43 on page 126.

WANTED!
BC-348
Airborne and Ground Electronics Test Equip.

WE PAY SWEET $$$ FOR CLEAN GEAR!
What else have you? Write today!

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Meters	Frequency Range	Crystal Modes	Price
80	3500 to 4000 KC	Fundamentals	$1.50
40	7000 to 7300 KC	Fundamentals	1.50
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15	21 to 21.45 MC	Third Mode	1.50
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Citizen Band Crystals	27.255 MC		1.85

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2, 6, 10 — Meter
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Motorola F.M. Transmitters .... 45.00 each

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W2NSD *[from page 10]*

since the band opened back in 1946 and have put in quite a bit of time on cw on that band The band is sufficiently wide, even in the heart of New York City which is certainly the most congested two meter area in the world to permit cw operation without undue QRM a all times. There is a gentlemen's agreement tha the lower end of the band will be left for cw when conditions are good for that mode o operation and very few operators have cause trouble to the serious cw DX'ers.

Frankly, I'm against setting up rules an regulations for every little whim. We could d very well with a lot less rules and depen more on a regard for others. Once these rule get on the books they stay there forever.

So, you fellows who are using six and tw meters, here is your chance to take your ow interests to heart. The chaps who are tryin to get this rule will largely be heard when th band is open and will not be talking to locals They certainly will not be doing anythin much to qualify as being in the Public Interes (PICON). And when the bands go dead agai you will have nothing but the 100 kc monument to remember them by.

The six meter gang will be hit even mor than the two meter contingent since they ar mainly gathered in the bottom 200 kc of th band now. This will essentially take away hal of their presently used band and will forc them to move up higher in frequency wher the TVI demons cast their spell with fervor

Reciprocation

A 21-gun salute to J. Bruce Siff, W2GB who on April 28th sent a petition to the FC with over a hundred signatures of license amateurs. Here is what it said . . .

"We, the undersigned, being interested i attempting to promote goodwill and furthe amateur radio operation between all countrie of the world, do hereby petition the Federa

[*Continued on page 119*]

FLASH!

We just got a wire from E. F. Johnson tha a brand new catalog on the complete Johnso line of ham equipment is rolling off the presses You won't want to miss this one, so write immediately to Bill Bruring, W9ZSO, E. F. Johnson, Waseca, Minnesota for Catalog #209. Thi will make sure you get one while they last.

NEW! 1 INCH PANEL METERS Self-shielded Moving coil

D.C. MICROAMMETERS
0-300 . . 5.95 0-500 .... 5.75

D.C. MILLIAMMETERS
0-1 .... 4.95 0-100 .... 4.95
0-5 .... 4.95 0-200 .... 4.95
0-10 .... 4.95 0-300 .... 4.95
0-50 .... 4.95 0-500 .... 4.95

D.C. VOLTMETERS
1000 Ohms Per Volt
0-3 .... 4.95 0-50 .... 4.9
0-10 .... 4.95 0-150 .... 4.9
0-300 .... 4.9

A.C. Rect. Type—1K Ω per V
0-15 .... 5.25 0-150 .... 5.2
0-300 .... 5.2

ALCO ELECTRONICS MFG. CO. Lawrence, Mass

11 METER RESULTS *[from page 88]*

Hawaii
KH6PM —13,284
KH6CKO— 1,326

Labrador
K0MNJ/VO2
— 2,660

Mexico
XE1QB — 231

Puerto Rico
KP4AEB—20,034

N. Zealand
ZL1MQ — 3,232

Uruguay
CX3BH — 1,200

Venezouela
YV3ABD— 5,112

UNITED STATES — CW

Alabama
K4ANB — 361

Arizona
W7PZ — 336

California
K6LVT — 6,437
W6ETJ — 4,339
K6SXA — 3,939
W6EYH — 2,871
W6ASH — 2,706
W6UYK — 1,055
W6JAI — 640
W6ZOL — 416
W6SRT — 200
K6ICS — 56

Colorado
W0CDP — 3,600

Connecticut
W1ODW — 2,277

Dist. of Col.
W3III — 285

Florida
W4IEH — 3,024

Georgia
W4ZKU — 3,128

Illinois
W9NII — 4,212
W9UNG — 247

Iowa
K0AZJ — 1,040
K0DQI — 742
W0QUZ — 1

Kansas
W0VFE — 608

Kentucky
W4JBQ — 1,170

Maine
W1GKJ — 1,485
K1AKO — 165
W1HAG — 143

Maryland
W3MSR — 1,620
W3JO — 400

Mass.
W1AQE — 3,330
W1CTW — 1,647
W1KT — 1,485
W1DDO — 939
W1PLJ — 28

Michigan
W8CFA — 45

Minnesota
W0QDP — 242

Mississippi
W5PGG — 15

Missouri
K0GJD — 300

Montana
W7DXM — 25

New Hamp.
W1BFT — 4,368

New Jersey
W2EQS — 7,266
K2PTU — 2,133
W2QDY — 850
W2BVE — 210
W2CYW — 26

New Mexico
K5IQA — 378

New York
W2CJM — 3,774
W2DGW — 3,400
W2HAE — 1,534
K2KND — 8

Ohio
W8AJW — 4,536

Pennsylvania
W3VDV — 2,890
W3VKD — 1,798
W3ARK — 1,450
W3CGS — 840
W3HTF — 630
W3DAO — 592
W3DYL — 558

Tennessee
W4WBK — 20

Texas
K5ABV — 3,498
K5AUZ — 1,750
W5YGR — 476
K5GTH — 98
W5GSE — 88

Virginia
K4OMR — 60

Washington
W7EMY — 4,255
W7SRX — 1,820
W7PQE — 368

West Virginia
W8UMR — 4

Wisconsin
W9YNB — 989
K9ELT — 104

Canada
VE4SX — 2,640
VE2AKF— 702
VE3RN — 221

Alaska
KL7JDC — 3,328

Costa Rica
TI2CAH — 20

New Zealand
ZL1MQ — 468

Puerto Rico
KP4KD — 4,200

W2NSD *[from page 118]*

Communications Commission to investigate into and report on the legislation necessary to allow reciprocal licensing of foreign amateurs in the United States."

I know I'm speaking for every amateur in the country when I say "thanks Bruce."

Word To The Wise

Ponder this, you phone men on the DX bands: suppose someone should make a tape of your next transmission. Could it be used as living proof that the hams don't deserve to have all those frequencies?

3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3
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3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3, Wayne, W2NSD

LT

FIRST **NEW** PUNCH DEVELOPMENT IN 20 YEARS . . . OBSOLETES EVERY OTHER PUNCH NOW ON THE MARKET

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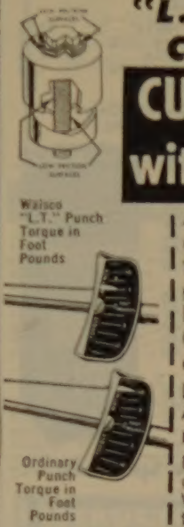

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A brand new electro-coating process (which can't wear off) reduces friction, thus lowers torque. You get a much cleaner hole with much less effort. The Walsco "L.T." Chassis Punch requires no lubrication of any kind and will give perfect service almost indefinitely. Available in a wide variety of sizes, round, square, key and D shapes.

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WALSCO ELECTRONICS MFG. CO.
A Division of Textron Inc. • West Coast Plant: Los Angeles 18, Calif.
Main Plant: 100 W. GREEN ST., ROCKFORD, ILL., U.S.A.

For further information, check number 44 on page 126.

MOSLEY TRAPMASTER
Model TA-33
for 10, 15 and 20

...but

Now! Not Just Rust-Resistant
FULLY RUST-PROOF!

All metal parts of aluminum, brass or stainless steel—including screws and U-bolts!•

Owners of earlier TA-33 models can obtain rust-proofing kits at cost.

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8622 St. Charles Rock Road • St. Louis 14, Mo.

For further information check number 6 on page 126.

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304TL	17.50	866A	1.50	CBS-6004	1.00

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SIZE	For Tube	Per 100
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GT	6SN7GT, etc.	1.25
Large GT	1B3GT, etc.	1.50
Large G	5U4G, etc.	2.00

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  This 12.6 volt input unit puts out 300 volts D.C. @ 335 MA.—all ratings clearly marked by mf'r on each unit. Comes complete with vibrator and CK-1006 tubes. Built with finest, commercial components.
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- **Barker & Williamson Model No. L-1001A Linear Amplifier** Brand New in Sealed B & W Original Carton........... $240.00
- **28 Volt—10 Amp Xmfr-Pri; 115 vac/60 CPS** $4.50
- **6 Volt Vibrapack—New Unused.** Delivers 300 Volts D.C. @ 100 ma. approx. (regular net over $30.00) Special $9.95

Cont. on Next Page

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Call letters only are undesirable. Please include name and address in all advertisements submitted.

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CRYSTALS AIR MAILED: Novice, general, net, mobile FT-243. Any kilocycle, 3500 to 8600 $1; Thin Gonset $1.45 1700 to 3499 $1.75; 8601 to 21,500 $1.95; Tested lattice filter crystals 25¢. Write for general crystal list. Crystals since 1933. C-W Crystals, Box 2065-c, El Monte, Calif.

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PROPAGATION *[from page 69]*

pected to begin to pick up during late August and early September. DX openings to many areas of the world are forecast during the afternoon hours, while short-skip openings are expected to occur almost daily. Good world-wide openings are forecast for *15-meters* during the late afternoon and early evening hours, with the band expected to remain open around-the-clock to some areas when conditions are better than average. Frequent short-skip openings, between approximately 400 and 2400 miles, are also forecast for August. *Twenty-meters* continues to be the best band for DX during the evening and early morning hours. Good openings are forecast to almost all areas of the world. During the full daylight hours seasonally higher ionospheric absorption will limit *20-meter* openings to less than approximately 2200 miles. Some night time and early morning DX may be possible on *10-meters*, but during the daylight hours openings will usually be limited to less than 500 miles. DX conditions are expected to be poor on both *80 and 160-meters* during August, although some openings may be possible on 80-meters when static levels are low. During the daylight hours, *80-meter* openings will not generally exceed 200 miles, while only groundwave propagation will be possible on *160-meters*. During the hours of darkness, when ionospheric absorption decreases considerably, openings up to 2,000 miles should be possible on *80-meters*, and up to 1,000 miles on *160-meters*.

Sunspot Cycle Progress

The Zurich Solar Observatory announced a monthly sunspot number of 175 for May, 1958. This results in a smoothed sunspot number of 199.5 centered on November, 1957.

Fig. 1 depicts the progress of the present record breaking sunspot cycle, cycle #19, since its beginning during April, 1954. According to the CQ smoothed sunspot number prediction, the present cycle reached its peak during November, 1957 with a smoothed number of 199.5. It will, however, be several months before this can be confirmed. The CQ forecast for the next year shows the cycle *declining* from the peak of 199.5 in November, 1957 to a level of 135 by May, 1959. This general level of solar activity, while lower than the past two years, is nevertheless, considered to be exceptionally high. This month's *CQ Propagation Charts* are based on a predicted smoothed sunspot number of 161 centered on August, 1958.

73, George, W3ASK

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